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GENERAL ARRANGEMENTS.

THE principal object of this Establishment is to qualify Young Gentlemen for the duties of the Counting House, or for other Commercial Appointments, upon a Plan coinciding with the practice of Business ; and, at the same time, if requisite, to afford them the means of continuing and extending a Classical Education, of acquiring an intimate knowledge of the Continental Languages, and of pursuing such Studies as are dependent on Mathematical Science.

The whole of this Course is attended with a moderate expense, and to remove as much as possible every impediment to its expeditious completion, the Vacations are of very limited duration.

The Arrangements for superintending the conduct of the Pupils, are assimilated, as much as possible, to the routine of Business of a well-regulated Counting-House, and secure to every gentleman a liberal treatment.

The Pupils are divided into three Classes ; the Class of Adult Pupils consists of a very limited number of Gentlemen requiring

separate attention, and who, consequently, enjoy almost every advantage of Private Tuition. The first of the other two Classes consists of Young Gentlemen immediately completing their Education, and the Second Class of such Pupils as require some preparation before they enter the First Class.

Gentlemen may either board or dine at the Academy, or they may attend only during the hours of Instruction.

The System of Instruction, in its chief Commercial Branches, agrees with the different Works on the Subject, which Mr. TATE, Sen., has laid before the Public, with some additions and alterations.

The business is conducted and constantly superintended by the Principals of this Establishment, and Assistant Masters of eminence are engaged in every department.

HOURS OF ATTENDANCE.

The business begins at Nine in the Morning, and no Pupil is admitted after Ten, unless by particular permission. The interval between half-past One and half-past Two is allowed for Dinner. No Pupil is admitted in the Afternoon after Three, and the business closes at Five; but Gentlemen living at a distance may leave at an earlier hour by appointment of their Friends. On Wednesday and Saturday the business closes at One.

To prevent improper irregular attendance, every Pupil is required to sign the Book of his Class, at his entrance into the School, and it is expected that he will be provided with a note to account for any previous absence.

When for misconduct or neglect of his Studies, a Pupil is detained at the Academy beyond the regular Hours, an account is taken of the cause and duration of his detention, and, if required, the same is transmitted to his Friends.

The Academy is opened on Monday and Thursday Evenings from Six to Nine, exclusively for the Instruction of Gentlemen engaged in business during the Day.

TIMES OF INSTRUCTION.

The Classes of English and the Classics are employed in succession throughout the whole of the day on Monday, Tuesday, Thursday, and Friday.

The French Classes are engaged the same Afternoons.

German Lessons are given four times in the week; and Geographical, Dancing, and Drawing Lessons, twice in the week.

Exercises in English and French Composition, particularly in Letter-Writing, form part of the business on Wednesday and Saturday Mornings.

Writing, Arithmetic, Book-keeping, and Mathematics, fill up the intervals otherwise left unoccupied, or they form the whole of the employment when the Course is limited to these branches.

CLASSIFICATION OF THE PUPILS.

The full complement of the Class of Adult Pupils is limited to Twelve Pupils; each of the other Classes to Thirty-six Pupils. Each of these larger Classes is separated into Three Divisions, consisting, as nearly as possible, of Pupils of similar ages, pursuits, and situations in society.

VACATIONS.

The Vacations are One Week each at the end of each Quarter of the Year.

TERMS.

The Terms for Instruction are either a fixed sum for the Pupil's completion, or the following Quarterly Charges for a General Course in the above Branches, without limitation.

The charge for the Class of Adult Pupils is Four Guineas per Quarter.

The charge for the First General Class of Pupils is Three Guineas per Quarter, and for the Second, Two Guineas and a Half per Quarter.

The Entrance Fee for Book-keeping, German, Drawing, and Dancing, is One Guinea for each branch.

When a Pupil enters for instruction in particular subjects, the whole charge for his completion is Four Guineas for each of the following branches, viz.

Writing, Arithmetic, Book-keeping, Geography, French, German, and the Classics ;

Or the whole charge for instruction in the first three branches is Ten Guineas, and for the first four branches Twelve Guineas.

Books and Materials are an extra expense.

The Terms for Board are Fifty Guineas per Annum ; for Dinners, Twelve Guineas per Annum.

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IN THE
DIRECT, INDIRECT, AND CROSS OPERATIONS
OF
BILLS OF EXCHANGE AND BULLION;
INCLUDING AN EXTENSIVE INVESTIGATION OF THE
ARBITRATIONS OF EXCHANGE,
ACCORDING TO THE PRACTICE OF THE FIRST
BRITISH AND FOREIGN HOUSES,
WITH
NUMEROUS FORMULÆ AND TABLES
OF THE
WEIGHTS AND MEASURES OF OTHER COUNTRIES,
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P R E F A C E.

IN the composition of an extensive work on Exchanges upon which I have been for some years engaged, I found it necessary to combine, in the form of an introduction, the explanations of the principles of those arithmetical processes which are of general application, in order both to save much repetition, and to admit of that minuteness which is requisite to give a clear conception of their purport. This however could not well be accomplished without the working of many examples, and the use of many formulæ, and when these were introduced the whole appeared too bulky, and, I may add, too elementary to constitute part of a treatise confined to the Practice of Exchanges. I have therefore adopted the suggestion of some of my commercial Friends, and made a separate volume of these materials, united with a brief notice of other subjects of most general utility; considering that the whole would form a compendium very convenient for reference, and would contain sufficient information to answer the purposes of many of those who desire to consult a Work upon Exchanges.

The arrangement which I have chosen being fully explained by the Table of Contents, it is unnecessary here to enter into any detail respecting it; and it may be considered almost as anticipating objections, to observe, that in the Direct Exchanges the limits of an introduction required the elucidation to be as concise as possible, although in some respects I have deviated from this rule, where any thing peculiar, and not generally understood, gave the matter more than ordinary interest.—Upon a comparison of my formulæ of the Courses of Exchange with those of other writers, much variation will be found to exist; and as all who have treated upon this subject are usually considered as very competent to investigate it, I must leave it to practical Cambists to decide between us. The same remark applies to the manner in which I have exhibited the comparisons of arbitrated rates of Bills of Exchange; but the superiority of my authorities makes me confident it will be found in strict conformity with the practice of the great commercial Houses, both in this Country and on the Continent.

By the introduction of some algebraic formulæ I have endeavoured to facilitate the calculations of preferable and equivalent rates, in what are termed Banking Operations; their importance, their constant occurrence in the business of the Counting House, and the silence in which, with a single exception, they have been passed over by English Cambists, must plead my excuse for the length at which I have treated upon them.—It is for similar reasons that I have occupied so much of the latter part of this Work with Bullion Operations, in which I have carefully followed the regulations of the Mint, and of the Bank of England: in the account I have also given of the practices of other

Countries, I have been equally guided by official documents, which the friendship of many distinguished individuals has placed at my disposal.—The Tables accompanying the Equations have been abridged from a set which was expressly calculated for the use of some large Houses concerned in these operations, and their utility is therefore confirmed by experience.

Minutiæ of detail, and authorities for my estimations of Foreign Monies, Weights, and Measures, necessarily belong to my larger Work, in which it has been my endeavour to exhibit, on an extensive scale, the present practice of Exchanges, accurately coinciding with the usages observed in these negotiations ; but notwithstanding the following pages are chiefly designed to aid the study of the elements of Exchange Operations, I have employed equal care to make my deductions from real transactions, and to avoid the erroneous and obsolete statements which have usually embarrassed the consideration of this subject.

W. TATE.

Queen Street, Cheapside,
London, June 1, 1829.

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FOREIGN EXCHANGES.

FOREIGN Exchanges are transfers from the money of account of one country to that of another, by the operation of Bills of Exchange.

A Bill of Exchange is a written order for the payment of a specified amount in the money of one of the places concerned, the equivalent amount in the money of the other place being calculated by a rate of Exchange.

A Rate of Exchange is the price of the money of one country reckoned in that of another country. Of the two terms of the rate, one is a fixed or invariable, and the other is an uncertain or variable, price. Thus between London and Paris, the rate of exchange is the value which is given for the £ Sterling, in a variable sum in Francs and Cents. The former sum is therefore the fixed price, and the latter the variable or uncertain price. Also between London and Lisbon, the rate of exchange is the value in Pence Sterling which is given for the Milreis, and therefore in this rate the Sterling money is the variable price.

When the fixed price is in the money of the country, that place of exchange is said to *receive* the variable price: when the uncertain price is in that money, it is said to *give* the variable price.

Thus London *receives* from Paris — *Francs — Cents* for 1 £ Sterling, and

London *gives* Lisbon — *Pence* for 1 Milreis.

A Course of Exchange is a list of the rates of exchange of the given place, on the different places with which it transacts exchange business.

The operations of Exchanges are usually divided into Direct, Cross, and Indirect or Arbitrated.

DIRECT EXCHANGES.

DIRECT Exchanges are the operations of exchange between two Countries, from their own rates of Bills of Exchange, without the medium of any other place.

GREAT BRITAIN.

LONDON.

ACCOUNTS are kept in Pounds, Shillings, and Pence ; which money is called Sterling, to distinguish it from the Colonial Money, and from some Monies of the Continent which bear similar denominations.

The rate of the value of the Pound Sterling in Gold, is for 1869 Sovereigns, or Pounds, to be coined out of 40 Troy Pounds' weight of Gold 11-12ths fine. The full weight therefore of a Sovereign is Dwts 5 $3\frac{1}{8}\frac{1}{3}$ Grains, and the fine weight is $113\frac{1}{6}\frac{1}{3}$ Grains.

The rate of Coinage for Silver, is 66 Shillings from 1 lb troy of Silver 37-40ths fine. The full weight of a Shilling is therefore Dwts 3 $15\frac{3}{11}$ Grains, and the fine weight $80\frac{8}{11}$ Grains.

N. B. In the following estimations of the Gold Coins of other Countries, they are valued at the above mintage rate of £ 3 17 10½ per Oz. British Standard ; but the Silver Coins are rated at the assumed price of 60 Pence per Oz. British Standard.

WEIGHTS AND MEASURES.

The Gold and Silver weight is the Troy Pound of 12 Ounces. The Ounce is 20 Dwts each of 24 Grains.

The Commercial Weight is the Pound Avoirdupois, weighing 7000 Troy Grains: 112 Pounds make 1 Cwt, and 20 Cwt 1 Ton. The Pound is divided into 16 Ounces, each of 16 Drams.

The Measure for Liquids is the Imperial Gallon. Its contents of distilled Water of the temperature of 62 Degrees of Fahrenheit's thermometer, or $13\frac{1}{3}$ Degrees of Reaumur's thermometer, weigh 10 lb Avoirdupois, or 70,000 Troy Grains, and it is computed to measure 277.274 Cubic Inches. The Gallon is divided into 4 Quarts or 8 Pints.

The Measure for Seeds and Dry Goods is the Imperial Bushel of 8 Imperial Gallons. Its contents are therefore 2218.192 Cubic Inches. 8 Bushels make 1 Quarter; and 10 Quarters 1 Last.

The usual Commercial Measure of length is the Yard of 3 Feet or 36 Inches. An Ell is 5 quarters of a Yard. 1760 Yards make 1 Mile, called a Statute Mile, as being fixed at this length by Act of Parliament; it is also so called to distinguish it from the Geographical Mile, or 60 th part of a Degree of the Meridian, which Degree in the Latitude of London, reduced to the level of the sea, is computed at 69.146 Statute Miles.

The chief of the late Measures of Capacity were, the Wine Gallon of 231 Cubic Inches, the Beer Gallon of 282 Cubic Inches, and the Winchester Bushel of 2150.42 Cubic Inches.

Hence 5 Imperial Gallons are nearly 6 Wine Gallons, and 31 Imperial Bushels nearly 32 Winchester Bushels.

The Standards of the Weights and of the Measures of length are the same as formerly; but the working Standards or Models of the Weights having become diminished by use, they were altered to the correct weights when the Imperial Standards of Capacity were adopted.

TABLES CONTINUED.

10 Lasts or 100 Imperial Quarters are equal to, in

France . .	290.77	Hectolitres.
Netherlands . .	9.69	Lasts of 30 Mudde or Hectolitres.
Hamburg . .	9.18	Lasts of 30 Scheffels.
Denmark . .	17.42	Lasts of 12 Tøendes.
Sweden . .	176.41	Tunna of 36 Kappar.
Prussia . .	7.34	Lasts of 72 Scheffels.
Russia . .	138.64	Chetwerts.
Turkey . .	828.41	Killows of Constantinople.
Austria . .	472.86	Metzen.
Naples . .	568.58	Tomoli.
Leghorn . .	397.89	Sacks.
Genoa . .	241.51	Mine.
Spain . .	514.78	Fanegas.
Portugal . .	2151.5	Alqueires of Lisbon.
Do. . .	1704.7	Ditto of Oporto.

100 Yards English are equal to, in

France . .	91.43	Metres.
Netherlands . .	91.43	Ells or Metres.
Hamburg . .	159.58	Ells.
Denmark . .	145.67	Ells.
Sweden . .	154.00	Ells.
Prussia . .	137.10	Ells.
Russia . .	128.57	Arshines.
Turkey . .	135.21	Pikes.
Austria . .	117.35	Ells.
Naples . .	43.27	Canne of 8 Palmi.
Leghorn . .	153.87	Braccia.
Genoa . .	36.575	Canne of 10 Palmi.
Spain . .	107.83	Varas.
Portugal . .	83.45	Varas.

COURSE OF EXCHANGE.

London receives from

Amsterdam	12 3	Florins and Stivers	for 1 £ Sterling.
Hamburg	13 12	Mks and Schill.	— 1 £ Sterling.
Paris	25 50	Fraucs and Cents	— 1 £ Sterling.
Frankfort	150½	Batzen.	— 1 £ Sterling.
Vienna	10 2	Florins and Kreuz.	— 1 £ Sterling.
Genoa	25 35	Lire and Centisimi	— 1 £ Sterling.
Berlin	6 25	Dollars and Silver Gros.	1 £ Sterling.

London gives to

St. Petersburg	10½	Pence Sterling	for 1 Ruble.
Madrid	36½	Pence	— 1 Dollar of Plate.
Gibraltar	48½	Pence	— 1 Hard Dollar.
Leghorn	48½	Pence	— 1 Dollar or Pezza.
Naples	39½	Pence	— 1 Ducat.
Palermo	116½	Pence	— 1 Onza or Oncia.
Venice	47	Pence	— 6 Lire Austriache.
Lisbon	49	Pence	— 1 Milreis.
Rio de Janeiro	30	Pence	— 1 Milreis.

The rates of Rotterdam and Antwerp are similar to the Amsterdam rate. That of Altona is similar to Hamburg, but by custom it is usually quoted $\frac{1}{2}$ Sch. Bco more, or, as it is called, worse. The Trieste rate is similar to the Vienna rate, and the Cadiz, Bilbao, Barcelona, and Seville rates are similar to that of Madrid.

The Usance of Bills drawn from France, Holland, and Germany is 30 days' date; from Spain and Portugal 60 days' date; and from Italy 3 months' date.*

The days of grace are 3. Bills are not presented for payment until the 3rd day, except this is a Sunday, Christmas-Day, or Good-Friday, when the Bill is reckoned due on the day before.

* The term Usance means the customary or usual time for which Bills are drawn from the given place, upon the place of payment. Double usance signifies double that time.

In Bills drawn from London it is most usual to specify the time; and in general, abroad, the practice of drawing Bills at usance is wearing away.

The days for the negotiation of Foreign Bills of Exchange are Tuesdays and Fridays. These are called Foreign Post Days, being the principal Post Days in consequence of the exchange business. It is the custom in London with Houses of established credit, to pay for the Foreign Bills they buy on one post day, on the following post day, when they receive the second and third Bills of Exchange.*

The Stamp Duties are paid by the Seller or Drawer.

The Brokerage on Bills is 1 per 1000 ; or 1-10th per Cent.

The present Stamp Duties on Sets of Bills, are for each Bill,

		not above £ 100	One Shilling and Sixpence.
above £ 100	—	200	Three Shillings.
200	—	500	Four Shillings.
500	—	1000	Five Shillings.
1000	—	2000	Seven Shillings and Sixpence.
2000	—	3000	Ten Shillings.
3000 and above			Fifteen Shillings.

Bills drawn upon Great Britain or Ireland from abroad, are not required to be stamped.

* Foreign Bills of Exchange are usually drawn in sets of three Bills, either of which being paid, discharges the claim upon the other two.

FRANCE.

PARIS. BOURDEAUX.

100 Centimes = 1 Franc.

Francs are also divided, nominally, each into 20 Sous, called Sous of Francs, the Sou being a piece of 5 Centimes or Cents.

The 20 Franc Piece in Gold is, at the full rate, worth 15 s 10½ d; and the 5 Franc Piece in Silver, 3 s 11 d Sterling. The Par in Gold is Fr. 25.22 Cents, and in Silver Fr. 25.57 Cents. Gold 25.2
Silver 25.57

The former money of account was in Livres, Sous, and Deniers. 81 Livres are equal to 80 Francs.

100 Kilogrammes	=	220.48 lb Avoirdupois.
100 Litres	=	22.01 Imperial Gallons.
100 Hectolitres	=	275.12 Imperial Bushels.
100 Hectolitres	=	34.39 Imperial Quarters.
100 Metres	=	109.36 English Yards.

COURSE OF EXCHANGE.

Paris gives to or receives from

London	25.40	Francs and Cts. for	1 £ Sterling.
Amsterdam	57½	Florins	— 120 Francs.
Berlin	3.62	Francs and Cts.—	1 Prussian Dollar.
Frankfort	2	per Ct. loss	
or	98	Francs at Paris—	100 Francs at Frankfort.
Genoa	¼	per Ct. profit.	
or	100½	Francs	— 100 Lire.
Hamburg	185	Francs	— 100 Marks Banco.
Leghorn	509	Centimes	— 1 Pezza.
Lisbon	617	Reis	— 3 Francs.
Madrid	15.40	Francs and Cts.—	1 Pistole of Plate.
Milan	84½	Centimes	— 1 Lira Austriacha.
Naples	410	Francs	— 100 Ducats del Regno.
St. Petersburg	107½	Centimes	— 1 Ruble.
Vienna	252	Francs	— 100 Florins.

EXAMPLE 1.

To exchange £ 500 into Francs at Fr. 25.42½ Cts.

£		Francs		£
If 1	—	25.425	—	500 ?
		500		

Francs 12712.50 Cents.

42½ Centimes are here expressed as 425 Millièmes.

EXAMPLE 2.

To exchange £ 454 10 6 into Francs at 25.25

Francs
454.525 amount at 1 Franc per £.
25.25
11363125
11363125

Francs 11476.76 Cents.

When the shillings and pence in the Sum in Sterling are valued in decimal parts of a Pound, there must be as many figures rejected from the right of the Product, as there are decimal figures; and if, as in Ex. 1, the rate is rendered into Millièmes, an extra figure must also be struck off.

Instead of the above, we may multiply the rate by the number of the Pounds, and take parts for the shillings and pence; thus,

Francs	25.25	by 454
	11463.50	for 454 £
	12.62½	10 s
	63	6 d

Francs 11476.76 Cents.

EXAMPLE 3.

To exchange Francs 11476.76 Cents into Sterling at 25.25

Fr.	£	Fr.
If 25.25	1	11476.76 ?
	£ £ s d	
25.25) 1147676	(454 10 6	Sterling.
	13767	
	11426	
	1326	

	) 26520 (10 s	
	1270	

	) 15240 (6 d	

N. B. The lowest usual variation in the rate with London is $1\frac{1}{4}$ Cents ; as 20, $21\frac{1}{4}$, $22\frac{1}{4}$, $23\frac{1}{4}$ Cents, &c. In case the rate contains a fraction, the first and third terms may be multiplied by 2 or 4 .

EXERCISES.

Exchange

- Ex. 1. £ 1000 into Francs at $25.17\frac{1}{2}$
 2. £ 248 12 6 into Francs at 25.35
 3. £ 554 13 7 into Francs at $25.41\frac{1}{2}$
 4. Francs 10,000 into Sterling at 25.45
 5. Francs 4782.50 Cents into Sterling at $25.37\frac{1}{2}$
 6. Francs 8897.57 Cents into Sterling at $25.51\frac{1}{2}$

PRODUCTS.

- Ex. 1. Francs 25175.00 Ex. 2. Francs 6302.64
 3. Francs 14095.78 4. Ster. £ 392 18 7
 5. Ster. £ 188 9 5 6. Ster. £ 348 15 1

EXAMPLE

Of the Valuation of French Stock,

To find the Sterling Cost of 1000 Rentes in 3 per Cent and 5 per Cent Stock, the rate of the former being 75.25 and of the latter 102.20 per Cent, the charges on each being estimated at $\frac{1}{2}$ per Cent, and the exchange on London being 25.20

3 per Cent. Stock.		5 per Cent. Stock.	
	1000 Rentes ?		1000 Rentes ?
3 —	100 Stock.	5 —	100 Stock.
100 —	75.25 Francs.	100 —	102.20 Francs.
	Fr.		Fr.
	75.25		102.20
	1000		1000
	<hr/>		<hr/>
3)	75250.00		102200.00
	<hr/>		0.2
	25083.33		<hr/>
	125.42 Charges.		20440.00
	<hr/>		102.20 Charges.
Francs	25208.75 Cts.	Francs	20542.20 Cts.
	<hr/>		<hr/>
Fr.	£	Fr.	
If 25.20 —	1 —	25208.75 ?	

Answer. £ 1000 6 11 Sterling, the value of the 3 per Cent Stock.

Fr.	£	Fr.
If 25.20 —	1 —	20542.20 ?

Answer. £ 815 3 4 Sterling, the value of the 5 per Cent Stock.

THE NETHERLANDS.

AMSTERDAM, ROTTERDAM, AND ANTWERP.

100 Cents = 1 Florin.

The Florin is also divided into 20 Stivers,* and in the late money of exchange it was reckoned at 40 Grotes Flemish, of which 12 Grotes made 1 Schilling Flemish, 10 Schillings Flemish being equal to 3 Florins.

A Rixdollar, a nominal money, is 50 Stivers or 2½ Florins.

The value of the 10 Florin Piece in Gold is 16 s 6½ d Sterling, and of the Florin in Silver, 1 s 8 d, the Par in Gold being Flor. 12.09 Cents, and in Silver, Flor. 11.97 Cents.

100 Ponden	=	220.48 lb Avoirdupois.
100 Kannen	=	22.01 Imperial Gallons.
100 Lasts	=	103.16 Imperial Lasts.
100 Ells	=	109.36 English Yards.

COURSE OF EXCHANGE.

Amsterdam gives to			
London	11.95	Florins and Cts for	1 £ Sterling.
Frankfort	36	Florins	— 20 Rixdollars.
Genoa	47½	—	— 100 Lire.
Hamburg	35	—	— 40 Marks Banco.
Leghorn	97½	—	— 40 Pezze.
Lisbon	37½	—	— 40 Crusados of 400 Reis.
Madrid	100½	—	— 40 Ducats of Exchange.
Naples	79½	—	— 40 Ducats del Regno.
Paris	57½	—	— 120 Francs.
St. Petersburg	10½	—	— 20 Rubles, Paper.
Vienna	36½	—	— 30 Florins.

The Usance of Bills from England is 1 month's date.

There are no days of grace.

* The Stiver is still used in the London rate of Exchange, but not in the Amsterdam rate.

EXAMPLE 1.

To exchange £ 500 Sterling into Florins, at Florins 12
2½ Stivers.

$$\text{Flor. 12 } 2\frac{1}{2} \text{ St.} = \text{Flor. 12.11}\frac{1}{4} \text{ Cents.}$$

Florins.

12.1125

500

Flor. 6056.25 Cents.

~~~~~

**EXAMPLE 2.**

To exchange £ 864 17 4 Sterling into Florins at Flor. 12  
7½ Cents.

$$£ 864 17 4 = £ 864.8666$$

Florins.

100 - - 864.8666

12

---

10378.3992

100 - - 43.243

21.621

for 5 Cents.

— 2½ —

---

Flor. 10443.26 Cents.

---

If, instead of this method, the rate should be multiplied by the number of Pounds Sterling, the 12 Fl. 7½ Cents must be expressed as Flor. 12.075 In the above, the multiplier may be this number, but in the regular performance of the multiplication, it requires a greater number of figures than the taking of the parts.

## EXAMPLE 3.

To exchange Flor. 6056.25 Cents into Sterling at Flor. 12  $11\frac{1}{4}$  Cents.

|                        |   |                |   |           |
|------------------------|---|----------------|---|-----------|
| Flor.                  |   | £              |   | Flor.     |
| If 12.11 $\frac{1}{4}$ | — | 1              | — | 6056.25 ? |
| 48.45                  |   |                |   | 24225.00  |
|                        |   | £              |   |           |
|                        |   | 4845 ) 2422500 |   |           |
|                        |   | £ 500 0 0      |   |           |
|                        |   |                |   | Sterling. |

There being a quarter of a Cent in the rate, the extreme terms ~~are~~ multiplied by 4 to reduce it.

## EXAMPLE 4.

To exchange Flor. 10443.26 Cents into Sterling at Flor. 12  $7\frac{1}{2}$  Cents.

|                        |   |                |   |                      |
|------------------------|---|----------------|---|----------------------|
| Flor.                  |   | £              |   | Flor.                |
| If 12.07 $\frac{1}{2}$ | — | 1              | — | 10443.26 ?           |
| 48.30                  |   |                |   | 41773.04             |
|                        |   | £              |   |                      |
|                        |   | 483 ) 417730.4 |   |                      |
|                        |   | £ 864.866      | = | £ 864 17 4 Sterling. |

The extreme terms are here multiplied by 4, instead of 2, to get rid of the fraction, in order to make fewer figures in the divisor, and if the multiplier in Ex. 3, had been 8 instead of 4, it would have had the same effect.

Formerly the rate on London was quoted in Schillings and Grotes Flemish; some houses still use this form, with which the calculation is made as in the following Example.

## EXAMPLE 5.

To exchange Flor. 6056.25 Cents into Sterling at 40 s  $4\frac{1}{2}$  g Flemish.

Reckoning 40 Sc. as 12 Florins, and  $4\frac{1}{2}$  Grotes as  $2\frac{1}{4}$  Stivers or  $11\frac{1}{2}$  Cents, the statement is made as in Ex. 4 : otherwise,

| Sc. Gr.              | £ | Flor.               |
|----------------------|---|---------------------|
| If 40 $4\frac{1}{2}$ | 1 | 6056.25 ?           |
| 12                   |   | 40                  |
| <hr/>                |   | <hr/>               |
| 484 $\frac{1}{2}$    |   | 242250.00           |
|                      |   | <hr/>               |
|                      |   | £                   |
| 4845 ) 2422500       |   |                     |
| <hr/>                |   |                     |
|                      |   | £ 500 0 0 Sterling. |
| <hr/>                |   |                     |

The principle of this form of calculation is derived from 12 Grotes making 1 Schilling Flem. and 40 Grotes, 1 Florin.

## EXERCISES.

## Exchange

- Ex. 1. £ 1000 Sterling into Florins at Fl. 11.95 Cts.  
 2. £ 1275 16 6 Sterling into Florins at Fl. 12  $1\frac{1}{2}$  Stiv.  
 3. Florins 8000 into Sterling at Fl. 12.05 Cents.  
 4. Florins 475.35 Cents into Sterling at 11 Fl. 18 $\frac{3}{4}$  Stiv.  
 5. £ 1000 Sterling into Florins at 39 s 10 g.  
 6. Florins 5574.43 into Sterling at 40 s  $1\frac{1}{2}$  g.

## PRODUCTS.

- Ex. 1. Flor. 11950.00      Ex. 2. Flor. 15405.59 Cents  
 3. £ 663 18 0 Ster.      4. £ 39 16 5 Ster.  
 5. Flor. 11650.00      6. £ 463 1 9 —

## HAMBURG.

|               |   |              |
|---------------|---|--------------|
| 12 Pfennings  | = | 1 Schilling. |
| 16 Schillings | = | 1 Mark.      |

~~~~~

3 Marks or 48 Schillings are called, in exchanges, a Rixdollar. 

~~~~~

There are two valuations of Hamburg, otherwise Lubec, money; the one called Banco, and the other Currency.

Banco is a nominal valuation of the Cologne Mark weight of fine Silver, at  $27\frac{3}{4}$  Marks Banco;\* from which estimation the Value of the Mark is  $17\frac{1}{2}$  d Sterling, and the Par of Exchange, 13 Mks  $10\frac{1}{2}$  Schill. per Pound Sterling. It is this money which is used in the accounts of wholesale business and in Exchanges, and it is of the same value as that called Flemish, 2 Grotes Flemish being equal to 1 Schilling Hamburg Banco; 32 Grotes to 1 Mark Banco; and 8 Schillings Flemish to 3 Marks Banco.

Currency is the value or rate of the coined money: this also is valued from the Cologne Mark weight of fine Silver which is to be coined into 34 Marks Current; hence the value of the 3 Current Mark Piece is 3 s 7 d, or of the Mark Current  $14\frac{1}{2}$  d Sterling, making 1 £ Sterling equal to 16 Mks 12 Sch. Current.

The difference between the value of Banco and Currency is called Agio. It is continually fluctuating, because the Market Price of fine Silver is always varying; at the above valuation the Agio is nearly  $22\frac{1}{2}$  per Cent.

When Goods at Hamburg are sold in Currency, the Agio is generally fixed either at 20 or 25 per Cent. The Agio is reckoned upon the Banco; and in a like manner the allowance called Rabat of  $8\frac{2}{3}$  per Cent, or  $4\frac{2}{3}$  per Cent, is reckoned upon the net amount. It is therefore to be noticed, that at 25 per Cent the Agio is 1-5 th of the Current or 1-4 th of the Banco; and at 20 per Cent it is 1-6 th of the Current or 1-5 th of the Banco; also that the Rabat at  $8\frac{2}{3}$  per Cent, is 13-163 rds of the given amount, and at  $4\frac{2}{3}$  per Cent it is 7 out of 107 parts.

---

\* The Cologne Mark weight, of the Hamburg Standard, is 3608 Grains troy, or 7 Oz. 10 Dwts 8 Grs troy; and this weight of fine Silver at the rate of 60 d Sterling per Oz. Standard, is worth 40 s  $7\frac{1}{2}$  d Sterling.

## WEIGHTS AND MEASURES.

|              |   |                   |                   |
|--------------|---|-------------------|-------------------|
| 100 Marks    | = | 751 $\frac{3}{4}$ | Oz. Troy.         |
| 100 lb       | = | 106.82            | lb Avoirdupois.   |
| 100 Viertels | = | 159.35            | Imperial Gallons. |
| 100 Lasts    | = | 108.85            | Imperial Lasts.   |
| 100 Ells     | = | 62.66             | Yards.            |

## COURSE OF EXCHANGE.

Hamburg, in Banco, *gives to or receives from*

|                       |                   |                 |     |                   |
|-----------------------|-------------------|-----------------|-----|-------------------|
| <i>London</i>         | 13 8              | Mks and Sch.    | for | 1 £ Sterling.     |
| <i>Amsterdam</i>      | 35 40             | Florins and Cts | —   | 40 Marks Bco.     |
| <i>Augsburg</i>       | 147               | Florins         | —   | 200 Do.           |
| <i>Berlin</i>         | 152               | Pruss. Dollars  | —   | 300 Do.           |
| <i>Copenhagen</i>     | 204               | Rix-Bco Dollars | —   | 300 Do.           |
| <i>Frankfort</i>      | 148 $\frac{1}{2}$ | Rixd. W. Z.     | —   | 300 Do.           |
| <i>Genoa</i>          | 187 $\frac{1}{2}$ | Lire            | —   | 100 Do.           |
| <i>Leghorn</i>        | 43 $\frac{3}{4}$  | Schill. Bco.    | —   | 1 Pezza.          |
| <i>Lisbon</i>         | 42                | Do.             | —   | 1000 Reis.        |
| <i>Leipzig</i>        | 147 $\frac{1}{2}$ | Rix Dollars     | —   | 300 Marks Bco.    |
| <i>Paris</i>          | 188 $\frac{1}{2}$ | Francs          | —   | 100 Do.           |
| <i>Prague</i>         | 146 $\frac{3}{4}$ | Florins         | —   | 200 Do.           |
| <i>Spain</i>          | 47                | Schill. Bco.    | —   | 1 Ducat of Plate. |
| <i>St. Petersburg</i> | 9 $\frac{1}{2}$   | Do.             | —   | 1 Ruble.          |
| <i>Vienna</i>         | 147 $\frac{3}{4}$ | Florins         | —   | 200 Marks Bco.    |

The Usance for Bills from England, France, and Holland, is 1 month's date.

The days of Grace are 12.

The Exchanges of Altona are the same as those of Hamburg.

## EXAMPLE 1.

To exchange £ 550 10 0 into Banco at 13 6

$$\begin{array}{r}
 \frac{1}{4} - - 550 \ 10 \\
 \quad \quad 13 \ 6 \\
 \hline
 7150 \\
 \frac{1}{2} - - 137 \ 8 \text{ for 4 Schillings.} \\
 \quad \quad 68 \ 12 - 2 - \\
 \quad \quad 6 \ 11 - 10 \text{ s Sterling.} \\
 \hline
 \text{Marks Bco } 7362 \ 15 \text{ Sc.}
 \end{array}$$

We here multiply 550 Mks by the 13, and take parts out of the 550 for 6 Sch. then for the 10 s, we take the half of 13 Mks 6 Sch.

Instead of this we may reduce the 13 Mks 6 Sch. into Schillings, (making 214 Schillings,) multiply these by the number of the Pounds, take parts for the Shillings Sterling, and then divide the total by 16, to bring it into Marks.

## EXAMPLE 2.

To exchange Bco Mks 4896 12 Sc. into Sterling at 13 10½

|                      |     |             |
|----------------------|-----|-------------|
| Mks Sc.              | £   | Mks Sc.     |
| If 13 10½ —          | 1 — | 4896 12 ?   |
| 218 Sc.              |     | 78348 Sc.   |
| 873 Qrs.             |     | 313392 Qrs. |
| £                    |     |             |
| 873 ) 313392         |     |             |
| £ 358 19 8 Sterling. |     |             |

## EXAMPLE 3.

To find the net produce of Mks 11363 9 Sc. at an Agio of 25 per Cent, and Rabat of  $8\frac{3}{4}$  per Cent.

|                   | Mks   | Sc. |           |
|-------------------|-------|-----|-----------|
| $\frac{1}{8}$ - - | 11363 | 9   | Currency. |
|                   | 1893  | 15  | Agio.     |

| Mks |      | Sc. |        |
|-----|------|-----|--------|
|     | 9469 | 10  | Banco. |
|     |      | 13  |        |

|       |        |   |
|-------|--------|---|
| 163 ) | 123105 | 2 |
|-------|--------|---|

|  |     |   |        |
|--|-----|---|--------|
|  | 755 | 4 | Rabat. |
|--|-----|---|--------|

|         |      |   |               |
|---------|------|---|---------------|
| Bco Mks | 8714 | 6 | Net Proceeds. |
|---------|------|---|---------------|

This Rabat is  $8\frac{3}{4}$  per Cent calculated upon the Net Proceeds.

N. B. If the fluctuating Agio, which is generally about 23 per Cent, is used, we must work the Proportion; thus, for the above, at  $23\frac{1}{2}$  per Cent we say,

|    | Mks               |   | Mks              |             | Mks   | Sc.   |         |
|----|-------------------|---|------------------|-------------|-------|-------|---------|
| If | 123 $\frac{1}{2}$ | — | 23 $\frac{1}{2}$ | —           | 11363 | 9     | Curr. ? |
|    | <u>493</u>        |   | <u>93</u>        |             |       | 93    |         |
|    |                   |   | 493 )            | 1056811     | 5     |       |         |
|    |                   |   |                  | 2143        | 10    | Agio. |         |
|    |                   |   |                  | <u>Mks.</u> | 9219  | 15    | Banco.  |

## EXERCISES.

## Exchange

- Ex. 1. £ 1000 Sterling into Banco at 14 0  
 2. £ 534 15 0 into Banco at 13  $11\frac{1}{2}$   
 3. £ 372 13 6 into Banco at 13  $13\frac{1}{2}$   
 4. Bco Mks 8765 4 into Sterling at 13 8  
 5. Bco Mks 6000 0 into Sterling at 13  $13\frac{1}{2}$   
 6. Bco Mks 9257 11 into Sterling at 13  $11\frac{1}{2}$

## PRODUCTS.

- |                    |                  |
|--------------------|------------------|
| Ex. 1. Mks 14000 0 | Ex. 4. £ 649 5 6 |
| 2. Mks 7336 2      | 5. £ 432 18 5    |
| 3. Mks 5153 6      | 6. £ 674 1 1     |



## PRUSSIA.

### BERLIN.

30 Silver Groschen = 1 Prussian Dollar.

The Prussian Dollar used until lately to be divided into 24 Good Groschen.

The value of the Dollar is obtained from the Standard Rate of 14 Dollars being coined from 1 Cologne Mark weight of fine Silver, from which the value of the Dollar is 2 s 10½ d Sterling, and the Par of exchange P. D. 6 27 S. G. per £ Sterling.

24.78

### WEIGHTS AND MEASURES.

|               |   |                          |
|---------------|---|--------------------------|
| 100 Pounds    | = | 103.11 lb Avoirdupois.   |
| 100 Quarts    | = | 25.20 Imperial Gallons.  |
| 100 Scheffels | = | 151.21 Imperial Bushels. |
| 100 Ells      | = | 72.93 English Yards.     |

### COURSE OF EXCHANGE.

Berlin gives to

|                |                     |                          |
|----------------|---------------------|--------------------------|
| London         | P. D. 6 24½ Gr. for | 1 £ Sterling.            |
| Amsterdam      | — 143.3-10 ths —    | 250 Florins.             |
| Augsburg       | — 103½ —            | 150 Florins, Convention. |
| Frankfort      | — 103½ —            | 100 Rix Doll. W. Z.      |
| Hamburg        | — 152.2 —           | 300 Marks Banco.         |
| Paris          | — 81.2 —            | 300 Francs.              |
| St. Petersburg | — 29.9 —            | 100 Rubles,              |
| Vienna         | — 103.4 —           | 150 Florins, effective.  |

N. B. The Money of Account, and the Weights and Measures throughout the Prussian dominions, are now uniformly regulated by the Berlin Standards.

## EXAMPLE.

To exchange £ 500 Sterling into Prussian Currency at  
P. D. 6 28½

|          |                    |
|----------|--------------------|
|          | D. Gr.             |
|          | 6 28½              |
|          | 100                |
|          | <hr/>              |
|          | 695 0              |
|          | 5                  |
| P. Doll. | <hr/> 3475 0 <hr/> |

## REVERSE.

To exchange P. Doll. 3475 0 at 6 28½

|    |               |                           |   |                    |
|----|---------------|---------------------------|---|--------------------|
|    | D. Gr.        | £                         |   | D. Gr.             |
| If | 6 28½         | —                         | 1 | —                  |
|    | <hr/> 208 Gr. |                           |   | <hr/> 3475 0 ?     |
|    | 417 ½ Gr.     |                           |   | <hr/> 104250 Gr.   |
|    |               | £                         |   | <hr/> 208500 ½ Gr. |
|    |               | 417 ) 208500              |   |                    |
|    |               | <hr/> £ 500 0 0 Sterling. |   |                    |

## EXERCISES.

## Exchange

- Ex. 1. £ 1000 Sterling into Prussian Currency at 7 1½  
 2. £ 807 18 6 into Prussian Currency at 6 21½  
 3. Pruss. D. 8000 into Sterling at 6 27½  
 4. Pruss. D. 4382 16 into Sterling at 6 23

## PRODUCTS.

- Ex. 1. P. D. 7041 20      Ex. 3. £ 1156 12 6  
 2. P. D. 5426 17      4. £ 647 13 4

## RUSSIA.

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### ST. PETERSBURG.

100 Copecs      =      1 Ruble.

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There are in Russia two sorts of money, viz. a Paper or Bank Currency, and a Metallic Currency.

The value of the Metallic Ruble in Silver, is  $37\frac{1}{2}$  d Sterling; its rate of exchange against the Paper Ruble is variable, but at present it is about  $3\frac{1}{2}$  Paper Rubles for one Silver Ruble, making the value of 1 Paper Ruble about 10 d Sterling.

---

### WEIGHTS AND MEASURES.

|                 |   |                          |
|-----------------|---|--------------------------|
| 100 Pounds      | = | 90.26 lb Avoirdupois.    |
| 100 Wedros      | = | 270.46 Imperial Gallons. |
| 100 Tschetwerts | = | 72.12 Imperial Quarters. |
| 100 Arschines   | = | 77.77 English Yards.     |

---

### COURSE OF EXCHANGE.

St. Petersburg receives for 1 Bank Ruble, from

|           |             |                                  |
|-----------|-------------|----------------------------------|
| London    | at 3 months | $10\frac{1}{2}$ Pence Sterling.  |
| Amsterdam | — 65 days   | $10\frac{1}{2}$ Stivers.         |
| Hamburg   | — 65 —      | $9\frac{1}{2}$ Schillings Banco. |
| Paris     | — 70 —      | $106\frac{1}{2}$ Cents.          |

---

The days of Grace are 10 for Bills after date, and 3 for Bills after sight.

The Old Style, or Julian Calendar, is still used throughout Russia. In comparison with the New Style it is 12 days later; thus, the 10 th of April in Russia, corresponds with the 22 nd of April in England.

**EXAMPLE.**

To exchange £ 818 14 4 Sterling into Rubles, Paper money,  
at  $10\frac{3}{8}$  d.

| d                  | R. | £ s d                  |
|--------------------|----|------------------------|
| If $10\frac{3}{8}$ | 1  | 818 14 4?              |
| <hr/> 83           |    | <hr/> 1571936 Eighths. |

Rubles.  
83 ) 1571936

Rubles 18938 99 Co.

N. B. If we had to reduce these into Silver Rubles, we must divide by the exchange, as  $3.72\frac{1}{2}$ ; sometimes the rate in Sterling is given per Silver Ruble, as at 37 d per Silver Ruble.

**REVERSE.**

To exchange Rubles 18938 99 Co. into Sterling at  $10\frac{3}{8}$

| d                 |                          |
|-------------------|--------------------------|
| $\frac{1}{2}$ - - | 18938.99                 |
|                   | <hr/> 10                 |
|                   | 189389.90                |
| $\frac{1}{2}$ - - | 4734.74 for 2-8 ths      |
|                   | <hr/> 2367.37 — 1-8 th   |
| d                 | <hr/> 196492             |
| s                 | <hr/> 16374 4            |
| £                 | <hr/> 818 14 4 Sterling. |

**EXERCISES.****Exchange**

- Ex. 1. £ 1000 Sterling into Paper Rubles at  $10\frac{1}{2}$  d.  
 2. £ 644 10 5 Sterling into Paper Rubles at  $10\frac{1}{2}$  d.  
 3. Rubles 8000.00 into Sterling at  $11\frac{1}{8}$  d.  
 4. Rubles 7464.42 into Sterling at  $10\frac{1}{2}$  d.  
 5. £ 1000 Sterling into Silver Rubles at  $37\frac{1}{2}$  d.  
 6. £ 1000 Sterling into Silver Rubles at  $10\frac{1}{2}$  d per Paper Ruble, and  $372\frac{1}{2}$  Paper Copecs per Silver Ruble.

**PRODUCTS.**

- |                      |                    |
|----------------------|--------------------|
| Ex. 1. Rub. 23414.63 | Ex. 4. £ 318 15 10 |
| 2. Rub. 14731.90     | 5. S. Rub. 6442.95 |
| 3. £ 370 16 8        | 6. S. Rub. 6285.80 |

## FRANKFORT ON THE MAIN.

---


$$90 \text{ Kreuzers} = 1 \text{ Rixdollar.}$$


---

A Rixdollar\* is  $1\frac{1}{2}$  Florin. A Florin is 60 Kreuzers or 15 Batzen, the Batz being 4 Kreuzers. A Kreuzer is 4 Hellers.

There are two monies of account at Frankfort, viz. Reichsgeld or 24 Guldenfuss, and Wechselzahlung.

Reichsgeld is called 24 Guldenfuss, or Florin-foot, from the Cologne Mark weight of fine Silver being valued at 24 of these Florins.

Wechselzahlung, or Exchange-reckoning, is deduced from the estimation of the Carolin at 9 Florins 12 Kreuzers in Wechselzahlung, the value of the same being 11 Florins in 24 Guldenfuss; from which

$$46 \text{ Rixdollars W. Z.} = 55 \text{ Rixdollars in 24 G. F.}$$

Wechselzahlung is very nearly of the same value as Convention-Money, or money in 20 Guldenfuss, in which the fine Silver contained in 20 Florins is to weigh 1 Cologne Mark; the former is only 4-11ths per Cent above the latter, the Carolin being valued at 9 Florins 10 Kreuzers in 20 Guldenfuss; therefore,

$$275 \text{ Rixdollars in 20 G. F.} = 276 \text{ Rixdollars in W. Z.}$$

The Sterling value of the Rixdollar in each of these valuations is, in

|                |   |   |              |
|----------------|---|---|--------------|
| 24 Guldenfuss  | . | . | 30.47 Pence. |
| Wechselzahlung | . | . | 36.43 Pence. |
| 20 Guldenfuss  | . | . | 36.56 Pence. |

The value of the Batz in W. Z. is 1 penny 62-100ths Sterling, and the Par of the Exchange on London 148.2 Batzen per £ Sterling.

---

\* It is to be noticed that a Reichsthaler, or Rixdollar, is a Dollar of account, and that it is 3-4ths of a Species-dollar, or a Dollar in Coin. The latter is 2 Florins.

## WEIGHTS AND MEASURES.

|                     |   |                          |
|---------------------|---|--------------------------|
| 100 lb heavy weight | = | 111.42 lb Avoirdupois.   |
| 100 lb light weight | = | 103.16 Do.               |
| 100 Malters         | = | 39.45 Imperial Quarters. |
| 100 Viertels        | = | 157.83 Imperial Gallons. |
| 100 Ells            | = | 59.85 English Yards.     |

---

## COURSE OF EXCHANGE.

Frankfort gives, in Wechselzahlung, to

|           |                              |     |                  |
|-----------|------------------------------|-----|------------------|
| London    | 150 $\frac{3}{4}$ Batzen     | for | 1 £ Sterling.    |
| Amsterdam | 139 $\frac{1}{2}$ Rixdollars | —   | 250 Florins.     |
| Augsburg  | 100 $\frac{1}{4}$ —          | —   | 150 Florins.     |
| Bremen    | 110 $\frac{1}{2}$ —          | —   | 100 Rixdollars.  |
| Hamburg   | 146 —                        | —   | 300 Marks Banco. |
| Paris     | 78 $\frac{3}{4}$ —           | —   | 300 Francs       |

in 24 Guldenfuss, to

|        |                            |                    |
|--------|----------------------------|--------------------|
| Berlin | 103 $\frac{1}{2}$ Kreuzers | 1 Prussian Dollar. |
|--------|----------------------------|--------------------|

---

The Rate with Augsburg is similar to that with Vienna ; and the Rate with Berlin to that with Breslau.

---

The Usance of Bills, not payable at the Fairs of this place, is 14 days' sight.

The days of Grace are four.

---

N. B. In the exchange between Paris and Frankfort, Pairs of Exchange are established in monies of the two places, and the rate at Paris is varied by a per Centage.—These Pairs are

|            |   |                                    |
|------------|---|------------------------------------|
| 640 Francs | = | 297 Florins in 24 G. F.            |
| 400 Francs | = | 103 $\frac{1}{2}$ Rixdollars W. Z. |

## EXAMPLE 1.

To exchange £ 500 Sterling into Frankfort money in 24 Guldenfuss at  $150\frac{3}{4}$

$$\text{Batz. } 150\frac{3}{4} = \frac{603 \text{ Kreuzers.}}{500}$$

$$90 \overline{) 301500}$$

$$\text{Rixdollars } \frac{3350 \text{ 0 in W. Z.}}{55}$$

$$46 \overline{) 184250}$$

$$\text{Rixdollars } \frac{4005 \text{ 39 in Reichsgeld.}}{}$$

## EXAMPLE 2.

To exchange R. D. 3350 W. Z. into Sterling at  $150\frac{3}{4}$

$$\begin{array}{ccc} \text{B.} & \text{£} & \text{R. D. Kr.} \\ \text{If } 150\frac{3}{4} & \text{— 1 —} & 3350 \text{ 0?} \end{array}$$

$$\frac{603 \text{ Kr.}}{}$$

$$\frac{301500 \text{ Kr.}}{}$$

$$\frac{\text{£ } 603 \overline{) 301500}}{}$$

$$\frac{\text{£ } 500 \text{ 0 0 Sterling.}}{}$$

## EXERCISES.

- Ex. 1. £ 1000 into Frankfort W. Z. at  $151\frac{1}{2}$
2. £ 814 14 6 into W. Z. at  $150\frac{3}{4}$
3. £ 1000 into Reichsgeld at Frankfort at 152
4. Rixd. 4000 W. Z. into Sterling at 151
5. Rixd. 4406 44 W. Z. into Sterling at  $150\frac{1}{2}$
6. Rixd. 8000 in 24 G. F. into Sterling at 151

## PRODUCTS.

- |                            |                  |
|----------------------------|------------------|
| Ex. 1. Rixd. W. Z. 6722 20 | Ex. 4. £ 596 0 6 |
| 2. R. D. W. Z. 5458 59     | 5. £ 658 15 7    |
| 3. R. D. 24 G. F. 8077 27  | 6. £ 996 19      |

## AUSTRIA.

### VIENNA AND TRIESTE.

60 Kreuzers = 1 Florin.

A Rixdollar is  $1\frac{1}{2}$  Florins or 90 Kreuzers ; it is a nominal money used in exchanges, but not in accounts.

The value of the money of account is that called Convention, or 20 Guldenfuss, in which, as before remarked, the Cologne Mark weight of fine Silver is supposed to be coined into 20 Florins.

The value in Sterling of the Florin at this rate, is 2 s  $0\frac{4}{10}$  d, from which the Par of exchange with London is 9 Fl. 50 Kr. per £ Sterling.

The Currency of Austria is of both Paper and Metal. The Paper money, called Wiener-Währung, or Vienna-Value, is at a fixed Discount of 150 per Cent ; that is, 100 Florins in Cash are equal to 250 Florins in W. W.

Bills upon Vienna are generally directed to be paid in effective,\* that is, in Cash, to guard against their being paid in Paper money of the depreciated Value.

### WEIGHTS AND MEASURES.

|                     |   |                           |
|---------------------|---|---------------------------|
| 100 Pfund or Pounds | = | 123.52 lb Avoirdupois.    |
| 100 Eimers          | = | 1245.78 Imperial Gallons. |
| 100 Metzen          | = | 21.15 Imperial Quarters.  |
| 100 Ells            | = | 85.21 English Yards.      |

\* Very frequently the particular money in which the Bills are to be paid is specified ; as in 20 Kreuzer Pieces.



## COURSE OF EXCHANGE.

Vienna, in effective, gives to or receives from

|                       |      |                   |                          |
|-----------------------|------|-------------------|--------------------------|
| London                | 10 3 | Flor. and Kr. for | 1 £ Sterling.            |
| Amsterdam             | 138½ | Rixdollars        | — 250 Florins.           |
| Augsburg              | 100½ | Florins           | — 100 Flor. Augs. Curr.  |
| <i>Constantinople</i> | 210  | Paras             | — 1 Florin.              |
| <i>Frankfort</i>      | 100½ | Florins W. Z.     | — 100 Flor. in 20 Kreuz. |
| Genoa                 | 118½ | Florins           | — 300 Lire Nuove.        |
| Hamburg               | 145  | Florins           | — 200 Marks.             |
| <i>Leghorn</i>        | 57½  | Soldi             | — 1 Florin.              |
| Milan                 | 100½ | Florins           | — 300 Lire Austriache.   |
| <i>Naples</i>         | 58½  | Grani             | — 1 Florin.              |
| Paris                 | 118½ | Florins           | — 300 Francs.            |

---

The Usance of Bills is 14 days.

The days of Grace are 3, reckoned as in England, Bills not being presented for payment until the third day after that on which the regular time expires.

---

Trieste gives to

|           |      |                   |                        |
|-----------|------|-------------------|------------------------|
| London    | 9 59 | Flor. and Kr. for | 1 £ Sterling.          |
| Amsterdam | 49½  | Kreuzers          | — 1 Florin.            |
| Genoa     | 23½  | Do.               | — 1 Lira Nuova.        |
| Hamburg   | 43½  | Do.               | — 1 Mark Banco.        |
| Leghorn   | 2 —  | Florins           | — 1 Pezza.             |
| Lisbon    | 1 55 | Flor. and Kr.     | — 1 Milreis.           |
| Messina   | 4 51 | Do.               | — 1 Onza.              |
| Milan     | 98½— | Florins           | — 300 Lire Austriache. |
| Naples    | 1 36 | Flor. and Kr.     | — 1 Ducat.             |
| Paris     | 23½  | Kreuzers          | — 1 Franc.             |
| Smyrna    | 16 — | Florins           | — 100 Piastres.        |

## EXAMPLE.

To exchange £ 456 17 8 Sterling into Florins at 10 1

$$\begin{array}{rcl}
 \text{£} & \text{s} & \text{d} \\
 456 & 17 & 8 \\
 & = & \text{£} \\
 & & 456.8833 \\
 & & \text{Florins.} \\
 \frac{1}{10} & - & - & 456.8833 \\
 & & & 10 \\
 \hline
 & & & 4568.833 \\
 & & & 7.614 \\
 \hline
 \text{Flor. } & 4576.447 & \text{ or } 27 \text{ Kr.}
 \end{array}$$

The decimal .447 of a Florin is valued in Kreuzers by multiplying it by 60.

~~~~~  
 REVERSE.

To exchange Florins 4576 27 into Sterling at 10 1

$$\begin{array}{rcl}
 \text{Fl. Kr.} & & \text{£} \\
 \text{If } 10 & 1 & \text{---} & 1 & \text{---} & \text{Fl. Kr.} \\
 & & & & & 4576 & 27? \\
 \hline
 601 & \text{Kr.} & & & & 274587 & \text{Kr.} \\
 & & & & & \text{£} \\
 601 &) & 274587 \\
 \hline
 & & \text{£ } 456 & 17 & 8 & \text{ Sterling.}
 \end{array}$$

~~~~~  
 EXERCISES.

- Ex. 1. £ 1000 Sterling into Florins at 9 57½  
 2. £ 216 12 6 into Florins at 10 2  
 3. Flor. 4484 20 into Sterling at 10 1  
 4. Flor. 5000 0 into Sterling at 10 1½

~~~~~  
 PRODUCTS.

- Ex. 1. Flor. 9958 20 Kr. Ex. 3. £ 447 13 9
 2. Flor. 2173 28 Kr. 4. £ 498 19 2

LOMBARDO-VENETO.

VENICE AND MILAN.

100 Centisimi = 1 Lira Austriacha.

The Lira is also divided into 20 Soldi Austriachi.

The Lira is the same value as the 20 Kreuzer Piece, or 1-3 rd of an Austrian Florin. The Piece of 3 Lire is of the same value as a Florin, and the Piece of 6 Lire as a Species-dollar.

The value of the Lira in Sterling is $8\frac{13}{100}$ d Sterling, from which the Par of exchange is Lire 29.52 Cent. per £ Sterling, or $48\frac{1}{2}$ d Sterling for 6 Lire.

WEIGHTS AND MEASURES.

100 lb Grosso	=	105.27 lb Avoirdupois.
100 lb Sottile	=	66.58 lb Avoirdupois.
100 Secchi	=	237.71 Imperial Gallons.
100 Staji	=	27.62 Imperial Quarters.
100 Ells, Silk Measure	=	69.30 English Yards.
100 Ells, Woollen Meas.	=	74.27 English Yards.

COURSE OF EXCHANGE.

Venice *gives to* or receives from

London	47 $\frac{1}{2}$	Pence Sterling for	6 Lire Austriache.
Amsterdam	96 $\frac{1}{2}$	Grotes —	6 Do.
Augsburg	59 $\frac{1}{2}$	Soldi Austr. —	1 Florin.
Genoa	86 $\frac{1}{2}$	Centisimi —	1 Lira Austriacha.
Hamburg	88 $\frac{1}{2}$	Grotes Bco —	6 Do.
Lisbon	49	Soldi Austr. —	400 Reis.
Leghorn	97 $\frac{1}{2}$	Soldi di Cambio —	5 Lire Austriache.
Naples	59 $\frac{1}{2}$	Grani —	3 Do.
Paris	86 $\frac{1}{2}$	Cents —	1 Do.
Vienna	60 $\frac{1}{2}$	Kreuzers —	3 Do.

The late money was in Lire Italiane of the same value as the French Franc. 87 Lire Italiane are reckoned worth 100 Lire Austriache.

EXAMPLE.

To exchange £ 464 10 Sterling into Lire Austriache at 30 Li. 15 Cent. per £ Sterling, and at $47\frac{1}{2}$ d Sterling for 6 Lire Austriache.

£		L. C.		£ s d.
If 1	—	30 15	—	464 10 0 ?
		464		

13989.60
15.07

Lire Aust. 14004.67 Cent. 1 st Product.

d		Lire		£ s d
If $47\frac{1}{2}$	—	6	—	464 10 0 ?

191 Farth.

445920 Farthings.

Lire
445920
6

191) 2675520

Lire Aust. 14007 95 Cent. 2 nd Product.

It is to be observed, that the first of these Rates is rather the Milan Rate, than either the Venice or the London Rate.

For the Rates of Exchange of Milan see Page 60.

EXERCISES.

- Ex. 1. £ 500 Sterling into Lire Aust. at 30 Lire.
2. £ 500 Sterling into Lire Aust. at 48 d.
3. £ 129 16 5 into Lire Aust. at $47\frac{1}{2}$ d.
4. Lire Aust. 8000 into Sterling at L. 30.30
5. Lire Aust. 6424 60 into Sterling at $48\frac{1}{2}$ d.
6. Lire Aust. 4578 92 into Sterling at $47\frac{1}{2}$ d.

PRODUCTS.

- | | |
|-----------------------|------------------|
| Ex. 1. L. A. 15000.00 | Ex. 4. £ 264 0 6 |
| 2. L. A. 15000.00 | 5. £ 215 5 4 |
| 3. L. A. 3956.44 | 6. £ 151 16 9 |

NAPLES.

100 Grani = 1 Ducat.

The Ducat is also divided into 5 Tari, or 10 Carlini.

The Neapolitan Ducat, which is of Silver, is called *del Regno*; its value is 3 s 3½ d Sterling, making the Par of the Exchange of Naples upon London 603½ Grani per £ Sterling.

WEIGHTS AND MEASURES.

The Cantaro Grosso of		
100 Rottoli	=	196.42 lb Avoirdupois.
The Cantaro Piccolo of		
150 Libbra of 12 Oz.	=	106.07 Do.
The Barile of Wine	=	9.11 Imperial Gallons.
The Tomolo of Wheat	=	1.41 Imperial Bushels.
A Canna	=	83.18 English Inches.

COURSE OF EXCHANGE.

	Naples gives to			
London	607.	Grani	for 1	£ Sterling.
Amsterdam	50.20	—	— 1	Florin.
Genoa	23.80	—	— 1	Lira Nuova.
Hamburg	44.15	—	— 1	Mark Banco.
Leghorn	122.75	—	— 1	Dollar of 8 Reals.
Lisbon	51.	—	— 1	Crusado.
Madrid	88.	—	— 1	Dollar of Plate.
Palermo	119.	—	— 1	Scudo of 12 Tari.
Paris	23.75	—	— 1	Franc.
Vienna	60.	—	— 1	Florin.
Venice	20.10	—	— 1	Lira Austriacha.

The Usance for Bills is 30 days' sight.

EXAMPLE.

To exchange £ 500 Sterling into Ducats at the rates of $39\frac{1}{2}$ d per Ducat, and of 607 Grani per £ Sterling.

d	Duc.	£
If $39\frac{1}{2}$	1	500 ?
<hr/> 79		<hr/> 240000 Half pence.

Duc.
79) 240000
<hr/> Ducati 3037.97 Grani. 1 st Product.

And
Gr.
607
500
<hr/> Ducati 3035.00 2 nd Product.

EXERCISES.

Exchange

- Ex. 1. £ 1000 Sterling into Ducats at $38\frac{1}{2}$ d.
 2. £ 818 12 2 into Ducats at $40\frac{1}{2}$ d.
 3. £ 651 16 6 into Ducats at 605 Gr.
 4. Ducats 4000 into Sterling at $39\frac{1}{2}$ d.
 5. Ducats 3050.50 into Sterling at $39\frac{1}{2}$ d.
 6. Ducats 8895.36 into Sterling at 612 Gr.

PRODUCTS.

- | | |
|-----------------------|-------------------|
| Ex. 1. Ducats 6193.54 | Ex. 4. £ 662 10 0 |
| 2. Ducats 4881.14 | 5. £ 502 1 3 |
| 3. Ducats 3943.54 | 6. £ 1453 9 10 |

PALERMO.

20 Grani	=	1 Taro.
30 Tari	=	1 Oncia or Onza.

The Scudo is 12 Tari or 2 Oncie are equal to 5 Scudi.

The full value of the Oncia is 10 s 3½ d Sterling, making the Par of exchange of Palermo on London, 58½ Tari per £ Sterling.

WEIGHTS AND MEASURES.

The Cantaro of 100 Rottoli	=	175.03 lb Avoirdupois.
100 Pounds of 12 Ounces	=	70.01 Do.
The Pipe of Wine of		
12 Sicilian Barrels	=	94.33 Imperial Gallons.
The Salma of Corn	=	7.61 Imperial Bushels.
The Canna of 8 Palmi	=	76.47 English Inches.

COURSE OF EXCHANGE.

Palermo gives to or receives from

London	60 Tari	for	1 £ Sterling.
Genoa	47 Grani	—	1 Lira Nuova.
Leghorn	12½ Tari	—	1 Pezza.
Naples	121 Ducats	—	100 Scudi.
Paris	46½ Grani	—	1 Franc.
Trieste	5 18 Tari and Grani	—	1 Florin.

EXAMPLE.

To exchange £ 136 12 6 into Oncie at the rates of $120\frac{1}{2}$ d per Oncie, and $59\frac{1}{2}$ Tari per £ Sterling.

d	Oncia	£ s d
If $120\frac{1}{2}$	1	136 12 6 ?
481 Farth.		131160 Farthings.

Oncie.
481) 131160
Oncie 272 20 9 1 st Product.

Also,

Tari.
$\frac{1}{2}$ - - 136.625
60
8197.500
34.656
On. Ta. Gr.
Tari 8163.344 = 272 3 10 2 nd Prod.

EXERCISES.

- Ex. 1. £ 1000 Sterling into Oncie at $120\frac{1}{2}$ d.
2. £ 865 15 0 Sterling into Oncie at 120 d.
3. £ 443 16 8 Sterling into Oncie at $60\frac{1}{2}$ Tari.
4. Oncie 1000 into Sterling at 119 d.
5. Oncie 453 18 16 into Sterling at 120 d.
6. Oncie 636 27 10 into Sterling at $59\frac{1}{2}$ Tari.

PRODUCTS.

- | | |
|------------------------|-------------------|
| Ex. 1. Oncie 1991 21 0 | Ex. 4. £ 495 16 8 |
| 2. 1731 15 0 | 5. 226 16 3 |
| 3. 891 10 19 | 6. 321 2 8 |

LEGHORN.

12 Denari	=	1 Soldo.
20 Soldi	=	1 Pezza or Dollar.

The accounts of Leghorn are usually kept in Pezze, Soldi, and Denari, but the general money of account of Tuscany is in Lire, divided also into 20 Soldi, each of 12 Denari.

The Pezza of Leghorn is called *da Otto Reali*, or of 8 Reals; it is an imaginary money valued at $5\frac{1}{2}$ Lire in Coin or effective money, called *Moneta Buona*, or at 6 Lire of an imaginary money called *Moneta Lunga*.

Effective or Cash money has also two valuations, one in Silver, which is the *money of account*, and is represented by Coins, and the other in Gold, which is now a nominal money; the latter is the money of Exchange in Leghorn, and the fixed Agio of its relation to Silver money is 7 per Cent, 100 Pezze in Gold making 107 Pezze in Silver.

The value of the Lire, *Moneta Buona*, in Silver is very nearly $7\frac{5}{10}$ d Sterling, in *Moneta Lunga* $7\frac{1}{2}$ d Sterling. The Pezza in Silver is worth about 45 d Sterling, in Gold about 48 d Sterling.

WEIGHTS AND MEASURES.

100 lb of Leghorn	=	74.86 lb Avoirdupois.
The Barile of Wine	=	10.03 Imperial Gallons.
The Sacca of Corn	=	2.01 Imperial Bushels.
The Canna of 4 Braccia	=	23.29 English Inches.

COURSE OF EXCHANGE.

Leghorn receives from

London	49	Pence	for	1	Pezza.
Amsterdam	99	Grotes	—	1	—
Florence	123 $\frac{1}{2}$	Soldi	—	1	—
Genoa	103	Soldi of Lire	—	1	—
Hamburg	89	Grotes	—	1	—
Lisbon	990	Reis	—	1	—
Madrid	136	Dollars of 8 Rs	—	100	Pezze.
Naples	123	Grani	—	1	Pezza.
Palermo	12 3	Tari and Grani	—	1	—
Paris	104	Sous in Francs	—	1	—
Rome	131	Bajocchi	—	1 $\frac{1}{2}$	—
Trieste	204	Florins	—	100	Pezze.
Venice	122	Soldi Austriachi	—	1	Pezza.

The Usance of Bills from England is 3 months' date.

EXAMPLE.

To exchange £ 800 into Pezze at $48\frac{1}{2}$

d	Pezza.	£
If $48\frac{1}{2}$	1	800 ?
<u>97</u>		<u>384000</u>

Pezze.
97) 384000

Pezze 3958 15 3

REVERSE.

To exchange Pezze 3958 15 3 into Sterling at $48\frac{1}{2}$

	£	s	d	
$\frac{1}{2}$ - -	3958	15	3	
$\frac{1}{96}$ - -	791	15	0.6	for 48 d
	8	4	11.4	— $\frac{1}{2}$
	<u>£</u>	<u>800</u>	<u>0 0</u>	<u>Sterling.</u>

To exchange the above into money of account, at the fixed
Agio of 7 per Cent.

P	s	d	
3958	15	3	in Gold.
277	2	3	Agio 7 per Cent.
Pezze	<u>4235</u>	<u>17 6</u>	in Silver.

EXERCISES.

- Ex. 1. £ 1000 Sterling into Pezze at $47\frac{1}{2}$ d.
 2. £ 626 17 5 into Pezze at 48 d.
 3. Pezze 10000 into Sterling at $48\frac{1}{2}$ d.
 4. Pezze 8447 14 4 into Sterling at 48 d.

PRODUCTS.

- Ex. 1. Pezze 5026 3 7 Ex. 3. £ 2010 8 4
 2. 3134 7 1 4. 1689 10 10

GENOA.

100 Centisimi = 1 Lira Nuova.

The Lira Nuova is of the same value as the French Franc, or the Lira Italiana, viz. 9½ d Sterling. The late money of Genoa was in Lire, Soldi, and Denari, called *fuori Banco*. 5 Lire Nuove are reckoned equal to 6 Lire fuori Banco.

The Exchanges were usually made in Pezze of 5½ Lire F. B. and in Price Currents, &c. this money is still employed. The Pezza is divided into 20 Soldi, each of 12 Denari, called Soldi and Denari *di Pezza*.

WEIGHTS AND MEASURES.

100 lb of Genoa	=	69.88 lb Avoirdupois.
100 Rottoli of 1½ lb	=	104.83 lb Avoirdupois.
The Barile of Wine	=	16.34 Imperial Gallons.
The Mina of Corn	=	3.31 Imperial Bushels.
The Braccio of 2½ Palmi	=	22.96 English Inches.

Genoa gives to

London	Lire 25.16	Cent.	for	1	£ Sterling.
Amsterdam	— 2.10	—	—	1	Florin.
Hamburg	— 1.85	—	—	1	Mark.
Lisbon	— 5.10	—	—	1	Milreis.
Leghorn	— 5.12	—	—	1	Pezza.
Madrid	— 3.74	—	—	1	Dollar of Plate.
Naples	— 4.16	—	—	1	Ducat.
Palermo	— 12.52	—	—	1	Oncia.
Paris	— .99	—	—	1	Franc.
Venice	— .87	—	—	1	Lira Austriacha.
Vienna	— 2.62	—	—	1	Florin.

The Usance of Bills from England is 3 months' date.
Days of Grace, 30 to the Holder, none to the Acceptor.

EXAMPLE.

To exchange £ 814 14 10 into Lire Nuove at 25.10

$$\begin{array}{r}
 \text{Lire.} \\
 814.7416 \\
 25.10 \\
 \hline
 81474160 \\
 40737080 \\
 16294832 \\
 \hline
 \text{Lire } 20450.01 \quad \text{Centisimi.}
 \end{array}$$

REVERSE.

To exchange Lire 20450.01 into Sterling at 25.10

$$\begin{array}{r}
 \text{L. C.} \quad \quad \quad \text{£} \quad \quad \quad \text{L. C.} \\
 \text{If } 25.10 \quad \text{---} \quad 1 \quad \text{---} \quad 20450.01 ? \\
 \quad \quad \quad \text{£} \\
 2510 \) \ 2045001 \\
 \hline
 \text{£ } 814 \ 14 \ 10 \ \text{Sterling.}
 \end{array}$$

These calculations are made in the same manner as the French Exchanges ; and in reducing Sterling into Lire, the same attention is to be paid to the decimal valuation as is directed in Page 10.

EXERCISES.**Exchange**

- Ex. 1. £ 1000 Sterling into Lire Nuove at 24.80
 2. £ 447 16 5 into Lire Nuove at 25.10
 3. Lire N. 10000 into Sterling at 24.95
 3. Lire N. 8487.13 C. into Sterling at 25.80

~~~~~

**PRODUCTS.**

- Ex. 1. Lire N. 24800.00      Ex. 3. £ Ster. 400 16 0  
 2. Lire N. 11240.30      4. £ Ster. 328 19 2

## SPAIN.

MADRID. CADIZ. MALAGA. BARCELONA.

### PLATE MONEY OF EXCHANGE AND ACCOUNT.

|                        |   |   |                     |
|------------------------|---|---|---------------------|
| 34 Maravedis, or       | } | = | 1 Real of Plate.    |
| 16 Quartos             |   |   |                     |
| 8 Reals                |   | = | 1 Dollar of Plate.  |
| 11 Reals 1 Maraved. or | } | = | 1 Ducat of Plate.   |
| 375 Maravedis          |   |   |                     |
| 4 Dollars of Plate     |   | = | 1 Pistole of Plate. |

### VELLON MONEY OF COIN AND ACCOUNT.

|                 |   |                |
|-----------------|---|----------------|
| 34 Maravedis    | = | 1 Real Vellon. |
| 20 Reals Vellon | = | 1 Hard Dollar. |

Hence,

|                     |   |                     |
|---------------------|---|---------------------|
| 17 Reals of Plate   | = | 32 Reals Vellon.    |
| 85 Dollars of Plate | = | 64 Hard Dollars.    |
| 1 Quarto of Plate   | = | 4 Maravedis Vellon. |

Also

15 Reals 2 Maravedis Vellon, or 512 Maravedis Vellon, equal 1 Dollar of Plate, but at Malaga only 15 Reals Vellon are reckoned to the Dollar.

N. B. In Alicant and all Valencia, the Dollar of Plate, or Libra, is divided into 20 Sueldos, each of 12 Dineros.

In Barcelona and all Catalonia, the Libra is similarly divided, but 5 Dollars of Plate are reckoned equal to 7 Libras.

### WEIGHTS AND MEASURES.

|                             |   |                        |
|-----------------------------|---|------------------------|
| 100 lb or 4 Arrobas         | = | 101.44 lb Avoirdupois. |
| 1 Cantaro or Arroba of Wine | = | 3.52 Imperial Gallons. |
| 1 Fanega of Corn            | = | 7.79 Imperial Bushels. |
| 1 Vara or Ell               | = | 33.38 English Inches.  |

N. B. These are the Castilian or Official Weights and Measures of Spain, but many of the Provinces have their own local Weights and Measures.

## COURSE OF EXCHANGE.

Spain receives from

|           |                  |                     |                        |
|-----------|------------------|---------------------|------------------------|
| London    | 36               | Pence Sterling      | for 1 Dollar of Plate. |
| Amsterdam | 98 $\frac{3}{4}$ | Grotes              | — 1 Ducat.             |
| Hamburgh  | 91               | Grotes              | — 1 Ducat.             |
| Paris     | 15 7             | Fr. and Sous of Fr. | — 1 Pistole.           |
| or        | 76 $\frac{3}{4}$ | Sous of Francs      | — 1 Dollar.            |

The Usance of Bills from England is at Cadiz 2 months' date; at Madrid 60 days' date.

N. B. Taking the value of the Hard or Spanish Dollar to be 50 $\frac{1}{8}$  d Sterling, the value of the Dollar of Plate is about 37 $\frac{3}{4}$  d, the Real of Plate 4 $\frac{3}{4}$  d, and the real Vellon 2 $\frac{1}{2}$  d.

## EXAMPLE 1.

To exchange £ 500 Sterling into Reals of Plate and Reals Vellon, at 36 $\frac{1}{2}$  d per Dollar of Plate.

|    | d                | Reals. | £      |
|----|------------------|--------|--------|
| If | 36 $\frac{1}{2}$ | 8      | 500 ?  |
|    | 73 Half Pence.   |        | 240000 |

Reals.

240000

8

73 ) 1920000

Reals P. 26301 6 Quartos.

32

17 ) 841644

Reals Vn 49508 16 Maravedis.

240 pence = 1 £  
 37 pence = 1 Dollar of Plate  
 35 pence = 1 Dollar of Vellon  
 15 pence = 1 Dollar of Vellon  
 12 pence = 1 Dollar of Vellon  
 10 pence = 1 Dollar of Vellon  
 8 pence = 1 Dollar of Vellon  
 5 pence = 1 Dollar of Vellon  
 4 pence = 1 Dollar of Vellon  
 3 pence = 1 Dollar of Vellon  
 2 pence = 1 Dollar of Vellon  
 1 pence = 1 Dollar of Vellon

## EXAMPLE 2.

To exchange R. P. 8469 10 Q. into Sterling at  $37\frac{1}{2}$  d.

|                   | £    | s  | d |                        |
|-------------------|------|----|---|------------------------|
| $\frac{1}{8}$ - - | 8469 | 12 | 6 | Amt. at 20 s per Real. |
| $\frac{1}{4}$ - - | 1058 | 14 | 0 | — 30 d                 |
|                   | 264  | 13 | 6 | — $7\frac{1}{2}$       |
| <hr/>             |      |    |   |                        |
| 8 )               | 1323 | 7  | 6 |                        |
| <hr/>             |      |    |   |                        |
| £                 | 165  | 8  | 5 | Sterling.              |

~~~~~

EXAMPLE 3.

To exchange R. Vn 5458 27 Mar. into Sterling at $36\frac{1}{2}$

	R. P.	
$\frac{1}{8}$ - -	5458	
$\frac{1}{16}$ - -	2729	for 16 Reals P.
	170 9	— 1 —
	7	— 27 M.
<hr/>		
R. P.	2900 0	

	£	s	d	
$\frac{1}{8}$ - -	2900	0	0	Amt. at 20 s per Real.
$\frac{1}{3}$ - -	362	10	0	— 2 s 6 d
$\frac{1}{12}$ - -	72	10	0	— 6
	6	0	10	— $\frac{1}{2}$
<hr/>				
8)	441	0	10	
<hr/>				
£	55	2	7	Sterling.

5458 Reals Vellon are 17-32 nds of 5458 Reals of Plate, and
27 Maravedis Vellon are $6\frac{1}{2}$, called 7 Quartos of Plate.

EXAMPLE 4.

To exchange R. Vn 18496 30 Mar. of Malaga into Sterling at 37 d.

	£				
$\frac{1}{8}$ - -	18496			Amount at 20 s per Real.	
$\frac{1}{3}$ - -	2312			for 30 d	
$\frac{1}{6}$ - -	462	8	0	—	6
	77	1	4	—	1
		2	8	—	30 Mar.*
	<hr/>				
	3)	2851	12	0	
	<hr/>				
	5)	950	10	8	
	<hr/>				
	£	190	2	2	Sterling.
	<hr/>				

* At the rate of 37 d for 34 Maravedis we must reckon 32 d for 30 Maravedis.

15 Reals Vn are at Malaga reckoned as 1 Dollar of Plate.

EXAMPLE 5.

To exchange Libras Catal. 4182 16 4 into Sterling at 39 d.

	£	s	d	
$\frac{1}{8}$ - -	4182	16	4	
$\frac{1}{10}$ - -	697	2	$8\frac{1}{2}$	for 40 d
	17	8	$6\frac{1}{2}$	— 1
	<hr/>			
	£	679	14	$\frac{2}{5}$
	<hr/>			
	7)	3398	10	10
	<hr/>			
	£	485	10	1 Sterling.
	<hr/>			

7 Libras of Catalonia are reckoned as 5 Dollars of Plate.

For Exercises see Page 46.

GIBRALTAR.

16 Quartos	=	1 Real.
12 Reals	=	1 Hard Dollar.

The money of account was formerly in Current Dollars of 8 Reals: it is now in Hard Dollars, which by some Mercantile Houses are divided into 100 Cents.

The value of the Dollar is the same as that of the Hard or Spanish Dollar, which is worth about $50\frac{1}{2}$ d Sterling.

THE WEIGHTS AND MEASURES

are chiefly those of England.

EXAMPLE 1.

To exchange £ 861 15 1 Sterling into Hard Dollars at 47 d.

d	H. D.	£ s d
If 47	1	861 15 1 ?

H. D.	206821 d
47) 206821	

H. D. 4400 5 6, or 45 Cents.

REVERSE.

To exchange H. D. 4400.45 Cents into Sterling at 47 d.

d	
4400.45	
47	
d 206821.15	
s 17235 1	
£ 861 15 1	Sterling.

PORTUGAL.

LISBON AND OPORTO.

1000 Reis = 1 Milreis.

400 Reis make 1 Crusado of Exchange; and 1000 Milreis are called a Conto of Reis.

The legal money of Portugal is one half in Specie and one half in Paper, which Paper being at a variable Discount, prevents any Par being assigned for the value of legal money.

The Milreis in Gold or Silver is reckoned worth $57\frac{1}{2}$ d Sterling; making one Real worth the 1-18th of a Penny Sterling.

WEIGHTS AND MEASURES.

100 Pounds	=	101.18	lb Avoirdupois.
The Arroba of 32 lb	=	32.38	Do.
The Almude of Lisbon	=	3.64	Imperial Gallons.
— Oporto	=	5.61	Do.
The Alquiere of Lisbon	=	0.372	Imperial Bushels.
— Oporto	=	0.465	Do.
The Vara	=	43.14	English Inches.
The Covado	=	25.88	Do.

COURSE OF EXCHANGE.

Lisbon and Oporto give to or receive from

London	40	Pence	for	1	Milreis.
Amsterdam	39	Grotes	—	1	Crusado.
Hamburg	42 $\frac{1}{2}$	Schillings	—	1	Milreis.
Madrid	2960	Reis	—	1	Pistole of Exchange.
Paris	192	Reis	—	1	Franc.

Discount upon Paper Money 24 per Cent.

The Usance of Bills from England is 30 days' sight with 6 days of Grace.

EXAMPLE.

To exchange £ 647 11 1 into Reis at $49\frac{1}{2}$ d.

d	Reis.	£ s d
If $49\frac{1}{2}$	1000	647 11 1 ?
<u>99</u>		<u>310826 $\frac{1}{2}$ d</u>

Reis.
9) 310826.000
11) 34536.222
<u>Reis 3:139.657</u>

REVERSE.

To exchange Reis 3:139.657 into Sterling at $49\frac{1}{2}$ d.

£
$\frac{1}{3}$ - - 3139.657
<u>$\frac{1}{32}$ - - 627.931</u>
19.623
<u>£ 647.554 = £ 647 11 1</u>

This is the shortest method, but it is more common to consider the Reis as Pence, and multiply by the rate.

EXERCISES.

Exchange

- Ex. 1. £ 1000 into Reis at $50\frac{1}{2}$ d.
 2. £ 245 6 3 into Reis at $52\frac{1}{2}$ d.
 3. Reis 10:000.000 into Sterling at $49\frac{3}{4}$ d.
 4. Reis 13:572.866 into Sterling at 49 d.

PRODUCTS.

- Ex. 1. Reis 4:776.119 Ex. 3. £ 2072 18 4
 2. Reis 1:121.428 4. £ 2771 2 6

The money of Portugal is either Paper, Metal, or Legal, the latter being half Paper and half Metal ; they are reduced from the one into the other of these monies by the following directions.

PAPER TO METAL.

Take the per Centage of the Agio and deduct it.

PAPER TO LEGAL.

Say, as 100 less half the Agio is to 100 less the whole Agio, so is the Paper to the Legal.

METAL TO PAPER.

Deduct the Agio from 100, and say, as the remainder is to 100, so is the Metal to the Paper.

METAL TO LEGAL.

Say, as 100 less half the Agio is to 100, so is the Metal to the Legal.

LEGAL TO PAPER.

Say, as 100 less the whole Agio is to 100 less half the Agio, so is the Legal to the Paper.

LEGAL TO METAL.

Take the per Centage of half the Agio and deduct it.

Exercises on the reduction of the different monies.

- Ex. 1. Reis 12:000.000 Paper to Metal at 16
- 2. Reis 12:000.000 Paper to Legal at 20
- 3. Reis 12:000.000 Metal to Paper at 16
- 4. Reis 11:492.880 Metal to Legal at $22\frac{1}{2}$
- 5. Reis 41:525.626 Legal to Paper at $24\frac{1}{2}$
- 6. Reis 47:640.446 Legal to Metal at 23

PRODUCTS.

- | | |
|------------------------|------------------------|
| Ex. 1. Reis 10:080.000 | Ex. 4. Reis 12:949.723 |
| 2. — 10:666.667 | 5. — 48:354.591 |
| 3. — 14:285.714 | 6. — 42:161.795 |

EXERCISES ON RATES OF EXCHANGE.

What rate of Exchange at London is established, by exchanging
£ 500 Sterling with

Ex. 1.	Paris	for Francs	12950 60	Cents.
2.	Amsterdam	— Florins	6010 45	Cents.
3.	Hamburg	— Banco Mks	6848 12	Schillings.
4.	Berlin	— Pruss. Doll.	3483 25	Silver Gr.
5.	Petersburg	— Rubles B.	11045 80	Copecs.
6.	Frankfort	— R. D. W. Z.	3361 44	Kreuzers.
7.	Vienna	— Florins	4982 20	Kreuzers.
8.	Venice	— Lire Aust.	15208 90	Centisimi.
9.	Naples	— Ducats	3075 48	Grani.
10.	Palermo	— Onze	1004 24	Tari.
11.	Leghorn	— Silver Pezze	2517 12 s 6 d.	
12.	Genoa	— Lire Nuove	13319 95	Centisimi.
13.	Madrid	— Reals Vellon	48000 10	Maravedis.
14.	Gibraltar	— Hard Dollar	2517 8	Reals.
15.	Lisbon	— Reis Legal	2:495.816	

PRODUCTS.

Ex. 1.	Francs	25 90	Centimes per	£ Sterling.
2.	Florins	12 02	Cents —	£ Sterling.
3.	Banco Mks	13 11 $\frac{1}{8}$	Schillings —	£ Sterling.
4.	Pruss. Doll.	6 29	Groschen —	£ Sterling.
5.	Pence	10 $\frac{3}{4}$	—	Ruble.
6.	Batzen	151 $\frac{1}{4}$	—	£ Sterling.
7.	Florins	9 57	Kreuzers —	£ Sterling.
8.	Pence	47 $\frac{5}{16}$	—	6 Lire.
9.	Pence	39	—	Ducat.
10.	Pence	119 $\frac{3}{8}$	—	Onza.
11.	Pence	47 $\frac{5}{8}$	—	Pezza.
12.	Lire	26 64	Centisimi —	£ Sterling.
13.	Pence	37 $\frac{5}{8}$	—	Dollar of Plate.
14.	Pence	47 $\frac{5}{8}$	—	Hard Dollar.
15.	Pence	48 $\frac{1}{16}$	—	Milreis.

BREMEN.

5 Schwaren	=	1 Grote.
72 Grotes	=	1 Rixdollar.

The Rixdollar is valued in Gold, from the old French and German Louis d'or, at the rate of 5 Rixdollars to 1 Louis d'or. Taking the value of this Louis d'or at 16 s 5 d Sterling, the value of the Bremen Rixdollar is 3 s 3.4 d, and the Par of Exchange on London is about 609½ Rixdollars of Bremen per 100 Sterling.

WEIGHTS AND MEASURES.

100 lb of Bremen	=	109.86 lb Avoirdupois.
The Ahm of 44 Stübchen	=	30.74 Imperial Gallons.
The Last of Corn	=	9.78 Imperial Quarters.
100 Bremen Ells	=	63.29 English Yards.

COURSE OF EXCHANGE.

Bremen gives, in full weight Louis, Carls, and Fredericks d'or
at 5 Rixdollars each, to

London	612	Rixdollars for	100	£ Sterling.
Amsterdam	127½	ditto	—	250 Florins.
Hamburg	133½	ditto	—	300 Marks Banco.
Paris	17½	Grotes	—	1 Franc.

Bremen receives for 100 Rixdollars, from

Augsburg	110½	Rixdollars Currency.
Berlin	115	Prussian Dollars.
Frankfort	110½	Rixdollars, W. Z.
Leipzig	110½	Rixdollars, W. Z.

The Usance of Bills from London is 1 month's date.

LUBEC.

12 Pfennings	=	1 Schilling.
16 Schillings	=	1 Mark.

The value of this money of account is the same as that of Hamburg Currency, the Cologne Mark weight of fine Silver being valued at 34 Marks of Lubec.

WEIGHTS AND MEASURES.

100 lb of Lubec	=	106.85 lb Avoirdupois.
100 Viertels	=	159.35 Imperial Gallons.
The Last of Corn	=	11.03 Imperial Quarters.
The Ell	=	22.91 English Inches.

COURSE OF EXCHANGE.

Lubec gives to
Hamburg 123½ Marks for 100 Marks Banco.

Almost entirely the whole of the Exchange business of Lubec upon other countries, is transacted through the Medium of Hamburg, and therefore Lubec Currency requires first to be reduced into Hamburg Banco, from which it may be exchanged into the money of any other country.

Thus to remit Marks 10,000 from Lubec to London, at 23½ per Cent from Lubec to Hamburg, and 13 Mks 9 S. from Hamburg to London.

Mks	Mks	Mks
If 123½	— 100	— 10000 ?
Result, Bco Mks 8113 9 S.		
Mks S	£	Mks S.
If 13 9	— 1	— 8113 9 ?
Result, £ 598 4 8 Sterling.		

DENMARK.

COPENHAGEN.

96 Skillings = 1 Rigsbank Dollar.

The Rigsbank or Rix-Banco Dollar is divided also into 6 Marks, each of 16 Skillings.

Estimating the Cologne Mark of fine Silver at $18\frac{1}{2}$ Rigsbank Dollars, the Danish Dollar is equal to $1\frac{1}{2}$ Hamburg Mark Banco, or to 26. 35 d Sterling; making the Par of Exchange with London R. D. 9 10 Sk. per £ Sterling, independent of the Agio upon paper money. With the Agio at 2 per Cent, the Rix-Banco Dollar is worth 25. 83 d Sterling, and the Par of Exchange with London is R. D. 9 27 Sk. per £ Sterling.

WEIGHTS AND MEASURES.

100 lb, Danish	=	110.13 lb Avoirdupois.
100 Viertels	=	170.08 Imperial Gallons.
100 Lasts, Danish	=	57.40 Imperial Lasts.
100 Ells	=	68.64 English Yards.

COURSE OF EXCHANGE.

Copenhagen gives to

London	9 35	R. Dollar and Skill. for	1 £ Sterling.
Amsterdam	195 $\frac{1}{2}$	Rigsb. Dollars	— 250 Florins.
Hamburg	204	Ditto	— 300 Marks Bco.
Paris	35 $\frac{1}{2}$	Skillings	— 1 Franc.

The chief if not the whole of the Exchange business of Copenhagen, is transacted through the Medium of Hamburg, the Par of Exchange between Copenhagen and Hamburg, exclusive of the Agio, being 200 Rix-Banco Dollars for 300 Marks Hamburg Banco.

SWEDEN AND NORWAY.

STOCKHOLM.

48 Skillings = 1 Rixdollar.

The value of the money of account and Exchange is nominal, as it entirely depends upon the credit given to the Paper Currency; the Silver Species-Dollar is valued at 4 s 5½ d Sterling, but the general average of the Rixdollar in Paper is about 1 s 9 d Sterling.

SWEDISH WEIGHTS AND MEASURES.

100 Pounds Vict. Wt	=	93.71 lb. Avoirdupois.
100 Kannen	=	57.58 Imperial Gallons
The Tunna of 36 Kappar	=	4.53 Imperial Bushels.
The Ell of 2 Feet	=	23.37 English Inches.

COURSE OF EXCHANGE.

	Stockholm gives to	
London	Rixdoll. 11 24	Skillings for 1 £ Sterling
Amsterdam	117	Ditto — 1 Rixdollar.
Hamburg	123	Ditto — 3 Marks Banco.
Lubec	101	Ditto — 3 Marks Lubec.
Paris	22½	Ditto — 1 Franc.

CHRISTIANA.

96 Skillings = 1 Species-Dollar.

The Norwegian Money of account is in Paper.—The Species-Dollar in Coin is equal to 2 Danish Rigsbank Dollars, or 3 Hamburg Marks Banco, or about 52¾ d Sterling.—The Course of Exchange on London was lately quoted at Sp. D. 6 24 Sk. per £ Sterling.

The Norwegian Weights and Measures are the same as those of Denmark.

TURKEY.

CONSTANTINOPLE.

40 Paras = 1 Piastre.

The money of Turkey is so much debased that it bears but little more than a nominal value.—Bills and Merchandise are chiefly valued from the rate borne by Foreign Coins, particularly Spanish and German Dollars.—Reckoning the former at $12\frac{1}{2}$ Piastres, the value of the Piastre is about 4 d Sterling.

WEIGHTS AND MEASURES.

The Rottolo of 180 Drams	=	1.27 lb Avoirdupois.
The Oke of 400 Drams	=	2.83 lb Avoirdupois.
The Almud (Liquid Measure)	=	1.15 Imperial Gallon.
The Killow of Corn	=	0.96 Imperial Bushel.
The Pike	=	$26\frac{1}{2}$ English Inches.

Constantinople gives to

London	$58\frac{1}{2}$ Piastres	for	1 £ Sterling.
Amsterdam	190 Paras	—	1 Florin.
Leghorn	460 Ditto	—	1 Pezza.
Marseilles	$88\frac{3}{4}$ Ditto	—	1 Franc.
Malta	$197\frac{1}{2}$ Ditto	—	1 Scudo.
Trieste	227 Ditto	—	1 Florin.
Vienna	226 Ditto	—	1 Florin.
		receives from	
Odessa	41 Copecs	for	1 Piastre.

Bills on London are usually drawn at 61 days' sight, and on all other places at 31 days' sight.

EGYPT.

ALEXANDRIA AND CAIRO.

40 Paras = 1 Piastre.

The Paras of Egypt are reckoned of the same value as the Turkish Paras, but the Piastres are esteemed of inferior value.

The general mode of estimating the value of this money, is, as at Constantinople, by comparison with the German and Spanish Dollars, which in Egypt are reckoned of equal value; hence if the German Dollar, valued at 48 Pence Sterling, be reckoned at 15 Piastres, the value of the Piastre is $3\frac{1}{3}$ Pence Sterling.*

WEIGHTS AND MEASURES.

CAIRO WEIGHTS.

40 Okes of 400 Drams	=	112 lb Avoirdupois.
800 Okes	=	20 Cwt Avoirdupois.
100 Rottoli or 1 Cantar	=	100 lb Avoirdupois.

ALEXANDRIA WEIGHTS.

100 Rottoli = 78 Okes = 218.4 lb Avoirdupois.

CORN MEASURES.

The Ardeb of Rosetta of Wheat is, by weight, equal to 168 Okes, or 470 lb Avoirdupois.

The Long Measure is the Turkish Pike, of $26\frac{1}{2}$ Inches.

* The comparison is here made with the German Species-Dollar, because by its being made equal in value to the Spanish Dollar, the latter Coin has almost entirely disappeared.

THE IONIAN ISLANDS.

CORFU. PAXO. ST. MAURA. CEPHALONIA.
ITHACA. ZANTE. AND CERIGO.

The money of Account is in British Currency, or Pounds Shillings and Pence Sterling. Spanish Doubloons valued at $15\frac{1}{2}$ Spanish Dollars, Spanish Pillar-Dollars valued at 104 Oboli or Halfpence, and German Dollars valued at 100 Oboli, are also Current, and the latter are also partially the money of account.

WEIGHTS AND MEASURES.

Besides the English Weights and Measures, the Venetian and Turkish are also employed, with particular sorts of Goods.

10 Okes equal 28 lb Avoirdupois, and the Quintal of 44 Okes equals 117 Venetian lb Peso Grosso, and 123.15 lb Avoirdupois.

The Venetian Barile for Wine, Oil, &c. of 4 Jars, is reckoned equal to 15 Imperial Gallons.

The Bacilo of Wheat in Zante and Cephalonia is estimated at $1\frac{1}{3}$ Imperial Bushels.

The Moggio of Wheat in Corfu is 5 Winchester Bushels.

The Braccio for Woollen Goods is reckoned at $27\frac{3}{8}$ Inches, and for Silk Goods at $25\frac{3}{8}$ Inches.

MALTA.

20 Grani	=	1 Tari.
12 Tari	=	1 Scudo.
30 Tari	=	1 Pezza or Sicilian Dollar.

The value of the Pezza taken from that of the Sicilian Silver Scudo of 12 Sicilian Tari, is 3 s 11½ d Sterling, but it is commonly reckoned at 4 s Sterling.

Hence the value of the Maltese Scudo is 19 d Sterling, and the Par of Exchange with London is about 12½ Scudi per £ Sterling.

For purposes of general business the Pezza is often valued at 50 d Sterling, and the Scudo at 20 d Sterling, and the £ Sterling is therefore at this estimation worth only 12 Scudi.

WEIGHTS AND MEASURES.

100 Maltese Rottoli	=	174.52	lb Avoirdupois.
The Barile of Wine	=	9½	Imperial Gallons.
The Caffiso of Oil	=	4½	Imperial Gallons.
The Salma of Corn	=	7½	Imperial Bushels.
The Cane or Canna	=	82.02	English Inches.

COURSE OF EXCHANGE.

Malta receives from

London 48½ Pence for 1 Pezza.

Malta gives to

Genoa	5	Tari	17½	Grani	for 1 Lira.
Leghorn	30	Tari	—	1	Pezza.
Marseilles	5	Tari	18	Grani	— 1 Franc.
Naples	24½	Tari	—	1	Ducat del Regno.
Trieste	15	Tari	—	1	Florin.

ROME.

100 Bajocchi = 1 Scudo Romano.

The estimated value of the Scudo or Crown, is nearly 4 s 2 d Sterling; it is divided into 10 Paoli, and the Par of Exchange upon London is about 48 Paoli per £ Sterling.

WEIGHTS AND MEASURES.

100, Roman Pounds = 74.77 lb Avoirdupois..
 100 Boccali = 40.12 Imperial Gallons.
 The Rubbio of Corn = 8.10 Imperial Bushels.
 The Canna of 8 Palmi = 78.35 English Inches.

COURSE OF EXCHANGE.

Rome gives to or receives from

London	48½ Paoli	for 1 £ Sterling.
Amsterdam	39½ Scudi Rom.	— 100 Florins.
Augsburg	47½ ditto	— 100 Florins.
Florence	106½ ditto	— 100 Francesconi.
Genoa	106½ Sous of Lire*	— 1 Scudo Romano.
Leghorn	97½ Scudi Rom.	— 100 Pezze.
Naples	126 Ducats	— 100 Scudi Romani
Paris	106 Sous of Francs*	— 1 Scudo Romano.
Venice	48½ Scudi Rom.	— 300 Lire Austriache.

Bills on London are usually drawn at 90 days' date.

There are not any days of Grace.

* Or Lire and Francs for 20 Scudi.

LOMBARDO-VENETO.

MILAN.

100 Centisimi = 1 Lira Austriacha.

For the value of this money see Venice, Page 31.

The former monies of account were in Lire Corrente of 20 Soldi each of 12 Denari, and Lire Italiane of 100 Centisimi.

145 Lire Corrente = 128 Lire Austriache.
 100 Lire Austriache = 87 Lire Italiane.

WEIGHTS AND MEASURES.

100 lb Peso Grosso = 168.22 lb Avoirdupois.
 100 lb Peso Sottile = 72.09 lb Avoirdupois.
 The Brenta of 96 Boccali = 15.71 Imperial Gallons.
 The Moggio of 8 Staja = 3.80 Imperial Bushels.
 The Braccio or Ell = 23.09 English Inches.

The Libbra Nuova or Kilogrammi, for the weighing of Gold and Silver, is the same as the French Kilogramme.

COURSE OF EXCHANGE.

Milan, in Lire Austriache and Centisimi, gives to

London	Lire 30.30 Centisimi	for	1 £ Sterling.
Amsterdam	— 2.49	—	1 Florin.
Augsburg	— 2.97	—	1 Florin.
Frankfort	— 2.49	—	1 Florin, 24 G. F.
Genoa	— 1.18	—	1 Lira Nuova.
Hamburg	— 2.18	—	1 Mark.
Leghorn	— 6.09	—	1 Pezza in Gold.
Naples	— 4.93	—	1 Ducat.
Paris	— 1.18½	—	1 Franc.

GENEVA.

12 Deniers	=	1 Sou.
20 Sous	=	1 Livre.
3 Livres	=	1 Ecu.

The value of the Ecu is reckoned at 45½ d Sterling.

WEIGHTS AND MEASURES.

100 lb heavy weight	=	121.41 lb Avoirdupois.
100 lb. light weight	=	101.18 lb Avoirdupois.
The Setier	=	10.06 Imperial Gallons.
The Coupe or Sack	=	2.14 Imperial Bushels.
The Ell	=	45.04 English Inches.

COURSE OF EXCHANGE.

Geneva gives to or receives from

<i>London</i>	46½ Pence Sterling	for	1 Ecu of 3 Livres.
<i>Amsterdam</i>	92½ Florins	—	40 Ecus
<i>Augsburg</i>	129½ Rixdollars	—	100 Ditto.
<i>Genoa</i>	163½ Lire Nuove	—	100 Livres.
<i>Hamburg</i>	22½ Sous	—	1 Mark Bco.
<i>Madrid</i>	44 Ditto	—	1 Dollar.
<i>Naples</i>	50½ Ditto	—	1 Ducat.
<i>Paris</i>	163½ Francs	—	100 Livres.
<i>Venice</i>	52 Sous	—	5 Lire Austriache.

The Usance for Bills from England is 30 days' sight.
There are 5 days of Grace.

BASIL.

~~~~~

|          |   |                |
|----------|---|----------------|
| 100 Raps | = | 1 Swiss Frank. |
|----------|---|----------------|

~~~~~

16 Swiss Franks are reckoned equal to 1 French Louis-d'or of 24 Livres; and the Par of Exchange with France, reckoning 81 Livres to 80 French Francs, is therefore 27 Swiss Franks for 40 French Francs; at this rate, the value of the Swiss Frank is about $13\frac{1}{2}$ d Sterling, and the Par of Exchange with London is about $17\frac{1}{2}$ Franks per £ Sterling.

WEIGHTS AND MEASURES.

100 lb of Basil	=	108.61 lb Avoirdupois.
The Ohm, liquid measure	=	10.77 Imperial Gallons.
The Sack, dry measure	=	3.56 Imperial Bushels.
The Large Ell	=	46.41 English Inches.
The Small Ell	=	21.42 English Inches.

Basil gives to or *receives from*

London	17.45	Franks and Raps for	1	£ Sterling.
Amsterdam	142 $\frac{3}{4}$	Franks	—	100 Florins.
Augsburg	169 $\frac{3}{4}$	Ditto	—	100 Florins.
<i>Frankfort</i>	97 $\frac{3}{4}$	Florins in 24 G. F.	—	100 Florins of Basil.
Hamburg	123 $\frac{1}{2}$	Franks	—	100 Marks Banco.
Leipzig	12.65	Franks and Raps	—	5 Rixdollars W. Z.
Milan	56 $\frac{1}{2}$	Franks	—	100 Lire Austriache.
Paris	99	Francs*	—	100 Francs of France.
Vienna	169 $\frac{3}{4}$	Franks	—	100 Florins.

* That is, reckoning 27 Franks of Basil for 40 French Francs, and then 99 Francs in Cash for 100 Francs in a bill on Paris.

ST. GALLEN.

~~~~~

|             |   |           |
|-------------|---|-----------|
| 60 Kreuzers | = | 1 Florin. |
|-------------|---|-----------|

~~~~~

The value of this money is in 24 Guldenfuss, the French Louis d'or of 24 Livres being valued at 11 Florins of St. Gallen; the value of 1 Florin is therefore very nearly 1 s 8½ d Sterling.

WEIGHTS AND MEASURES.

100 lb heavy weight	=	128.9 lb Avoirdupois.
100 lb light weight	=	102.5 lb Avoirdupois.
The Eimer of 32 Máss	=	11½ Imperial Gallons.
The Mütt of 4 Viertels	=	2.09 Imperial Bushels.
The Ell for Woollens	=	24½ English Inches.
The Ell for Silks	=	31½ English Inches.

COURSE OF EXCHANGE.

St. Gallen gives, in Louis d'or valued at 11 Florins, to

London	12 15	Florins and Kreuz. for	1 £ Sterling.
Amsterdam	59½	Kreuzers	— 1 Neth. Florin.
Augsburg	119½	Florins	— 100 Florins Aug. Cur.
Frankfort	99½	Florins	— 100 Florins in 24 G. F.
Geneva	132	Kreuzers	— 3 Livres.
Hamburg	151	Kreuzers	— 3 Marks Banco.
Leipzig	180	Florins	— 100 Rixdollars.
Leghorn	146½	Kreuzers	— 1 Pezza of 8 Reals.
Milan	25½	Kreuzers	— 1 Lira.
Paris	101	Francs*	— 100 Francs in Paris.
Turin	28½	Kreuzers	— 1 Lira Nuova.

* The Par with Paris is 297 Florins for 640 Francs.

AUGSBURG.

60 Kreuzers	=	1 Florin.
-------------	---	-----------

The Florin in Augsburg Currency is valued after the Convention Rate, or the 20 Guldenfuss; it is therefore the same as the Austrian Florin, or 2 s 0.4 d Sterling, and the Par of Exchange with London is 9 Fl. 50 Kr. per £ Sterling.

In the Exchanges of Augsburg upon Amsterdam and Hamburg there is a nominal value, called Giro, given to the Florin, by which 127 Florins, Convention Money, or Augsburg Currency, are reckoned equal to 100 Florins in Giro.

WEIGHTS AND MEASURES.

100 lb heavy weight	=	108.30 lb Avoirdupois.
100 lb light weight	=	104.23 lb Avoirdupois.
The Muid of 48 Máss	=	15.08 Imperial Gallons.
The Schaff of 8 Metzen	=	5.65 Imperial Bushels.
The Long Ell	=	24.00 English Inches.
The Short Ell	=	23.32 English Inches.

Augsburg gives to or receives from

London	Flor. 9 50 Kr.	for	1 £ Sterling.
Amsterdam	Rixd. 108½ in Giro	—	250 Florins.
Frankfort	Flor. 99¾ Current	—	100 Florins in 20 G. F.
Genoa	*Soldi 51 di Lire N.	—	1 Florin.
Hamburg	Rixd. 114¾ in Giro	—	300 Marks Banco.
Milan	*Soldi 60¾ di Lire A.	—	1 Florin.
Leghorn	*Soldi 57½ di Pezza	—	1 Florin.
Paris	Flor. 117¼ Current	—	300 Francs.

The Usance for Bills on Augsburg is 15 days' sight.

* Or Lire and Pezza for 20 Florins.

SAXONY.

DRESDEN AND LEIPZIG.

12 Pfennings	=	1 Groschen.
24 Groschen	=	1 Rixdollar.

The value of the Rixdollar is very nearly $36\frac{1}{2}$ d Sterling, and the Par of Exchange with London, Rixd. 6 13.8 Groschen.

WEIGHTS AND MEASURES.

100 Saxon Pounds	=	103.07 lb Avoirdupois.
The Eimer, Leipzig Meas.	=	16.50 Imperial Gallons.
The Eimer, Dresden Meas.	=	12.98 Imperial Gallons.
The Scheffel Ditto	=	2.95 Imperial Bushels.
The Saxon Ell	=	22.25 English Inches.

Leipzig, in Exchange Money gives to

London	Rixd. 6 15 $\frac{3}{4}$	Grosch. for 1 £ Sterling.
Amsterdam	— 140 $\frac{1}{2}$	— 250 Florins.
Augsburg	— 100 $\frac{1}{2}$	— 150 Florins.
Bremen	— 108 $\frac{3}{4}$	— 100 Rixd. in Louis-d'or.
Frankfort	— 100 $\frac{1}{2}$	— 100 Rixd. W. Z.
Hamburg	— 148 $\frac{1}{2}$	— 300 Marks Banco.
Paris	— 79	— 300 Francs.
Vienna	— 100 $\frac{1}{2}$	— 150 Florins.

receives from

Berlin	103 $\frac{1}{2}$ Pruss. Dollars for 100 Rixdollars. W. Z.
--------	--

N. B. Exchange Money, W. Z. is properly Saxon Species-dollars valued at 32 Groschen each ; but it is also allowed to be in French Crowns, Brabant Dollars, and some other smaller Coins, rated after the Convention Rate or in 20 Guldenfuss.

EXERCISES ON LONDON.

EXERCISES.

Exchange £ 500 Sterling with

- Ex. 1. Bremen, at $613\frac{1}{2}$ Rixdollars per £100 Sterling.
 2. Lubec through Hamburg; at $22\frac{3}{4}$ per Cent from Lubec to Hamburg, and Mks $13\ 8\frac{1}{2}$ Sc from Hamburg to London.
 3. Copenhagen through Hamburg; at 204 R B Dollars per 300 Mks Bco from Copenhagen to Hamburg, and at Mks $13\ 9\frac{1}{2}$ Sc. from Hamburg to London.
 4. Stockholm, at Rixd. 11 20 Sk. per £ Sterling.
 5. Christiana, at Sp. D. 6 24 Sk. per £ Sterling.
 6. Constantinople, at $61\frac{1}{2}$ Piastres per £ Sterling.
 7. Malta, at $48\frac{1}{2}$ Pence per Pezza.
 8. Rome, at $48\frac{1}{2}$ Paoli per £ Sterling.
 9. Geneva, at $46\frac{1}{2}$ Pence per Ecu of 3 Livres.
 10. Basil, at 17.25 Franks per £ Sterling.
 11. Basil, through Paris; at $99\frac{1}{4}$ Francs per 100 Francs, and Frs. 25.40 per £ Sterling.
 12. Augsburg, at Flor. 9 55 Kr. per £ Sterling.

PRODUCTS.

Ex. 1. Bremen	Rixdollars	3067 36	Sch.
2. Hamburg	Marks	6765 10	Sch.
Lubec	Marks	8304 13	Sch.
3. Hamburg	Marks	6796 14	Sch.
Copenhagen	R. B. Doll.	4621 84	Skill.
4. Stockholm	Rixdollars.	5708 16	Skill.
5. Christiania	Spe.-Doll.	3125 0	
6. Constantinople	Piastres	30750 0	
7. Malta	Scudi	6217 7	8 Tari & Gra.
8. Rome	Scudi	2430 0	
9. Geneva	Livres	7783 15	8 Sous & Den.
10. Basil	Franks	8625 0	
11. Paris	Francs	12700 00	
Basil	Franks	8508 21	Raps.
12. Augsburg	Florins	4958 20	Kreuz.

NORTH AMERICA

THE BRITISH COLONIES AND THE WEST INDIES.

The general money of Account is Pounds, Shillings, and Pence Currency.—Spanish Dollars are also a partial money of Account, and bear fixed values relative to Currency.

In some places, there is a fixed relation between Currency and Sterling, and the variation in the Rates of Exchange is made by a Premium or Discount; in others the Exchange is at once made by a per Centage reckoned upon the Sterling: thus in

CANADA, and the Northern Provinces, £ 100 Sterling are worth at Par, £ 111½, reckoned £ 111 2 3, Currency, or £ 90 Sterling are worth £ 100 Currency.

JAMAICA, the Currency is fixed at £ 140 for £ 100 Sterling, and the Spanish Dollar at 6 s 8 d Currency.

BARBADOES, the Dollar is fixed at 6 s 3 d Currency.

GRENADA, ST. VINCENT, TOBAGO, and the other Windward Islands, as well as in TORTOLA and the Leeward Islands, the Dollar uncut is reckoned at 9 s Currency, and cut at 8 s 3 d Currency.

WEIGHTS AND MEASURES

The Weights and Measures are generally the same as those of Great Britain, but with the late Measures of Capacity.

THE UNITED STATES.

100 Cents = 1 Dollar.

The Dollar is valued at 4 s 6 d Sterling, and the rate of Exchange is regulated by a Premium or Discount upon the Sterling.

Formerly each State in the Union employed its own Currency and valuation of the Dollar, and these are still occasionally referred to and used.

The fixed per Centage value of each Currency, with respect to Sterling, and the Currency value of the Dollar, are as follows :

New England Currency	133 $\frac{1}{3}$	per Cent.	Dollar	6 s	Currency.
Maryland	—	166 $\frac{2}{3}$	—	—	7 s 6 d —
New York	—	177 $\frac{1}{9}$	—	—	8 s —
Georgia	—	103 $\frac{1}{2}$ $\frac{9}{7}$	—	—	4 s 8 d —

The Currency of the New England States is the same as the Currencies of Vermont, Virginia, and Kentucky.

That of Maryland, as New Jersey, Pennsylvania, and Delaware.

Of New York, as North Carolina.

Of Georgia, as South Carolina.

The First Currency is to Sterling	as	3	to	4
Second	—	—	—	3 to 5
Third	—	—	—	9 to 16
Fourth	—	—	—	27 to 28

WEIGHTS AND MEASURES.

The Weights are the same as those of Great Britain, but the Measures of capacity are the late Wine and Beer Gallons, and the Winchester Bushel.

EXAMPLE 1.

To exchange £ 800 Canada Currency into Sterling, at the Par of £ 111 $\frac{1}{2}$ per Cent, or £ 100 Currency for £ 90 Sterling.

£		£		£	s	d
If 100	—	90	—	800	0	0 ?
			1-10 th	80	0	0
				£ 720	0	0 Sterling.

REVERSE.

£ 720 0 0 Sterling into Canada Currency at Par.

£		£		£	s	d
If 90	—	100	—	720	0	0 ?
			1-9 th	80	0	0
				£ 800	0	0 Currency.

EXAMPLE 2.

To exchange £ 524 18 6 Bermuda Currency into Sterling, at the Par of 180 per Cent.

£		£		£	s	d
If 180	—	100	—	524	18	6 ?
9		5				5
				9) 2624	12	6
				£ 291	12	6 Sterling.

REVERSE.

£ 291 12 6 Sterling into Bermuda Currency at Par.

£		£		£	s	d
If 100	—	180	—	291	12	6 ?
5		9				9
				5) 2624	12	6
				£ 524	18	6 Currency.

EXAMPLE 3.

To exchange £ 600 Jamaica Currency into Sterling, at the Par of 140 per Cent.

£	—	£	—	£	s	d
If 140		100		600	0	0 ?
7		5			5	
				7)	3000	0 0
					£ 428 11 5	Sterling.

REVERSE.

£ 428 11 5 Sterling into Jamaica Currency, at the Par of 140 per Cent.

£	—	£	—	£	s	d
If 100		140		428 11	5	?
		7			7	
				5)	2999 19 11	
					£ 600 0 0	Currency.

EXAMPLE 4.

To exchange Dollars ~~5696~~ 72 Cents U. S. Currency into Sterling, at the Par of 4 s 6 d Sterling per Dollar.

D.	—	£	—	Doll.
If 40		9		5696 72 ?
		£		
		5696 72		
		9		
		40)	51270. 48	
			Sterling £ 1281. 762	= £ 1281 15 3

REVERSE.

£ 1281 15 3 Sterling into U. S. Currency at Par.

Doll.	
1281 762	
40	
9)	51270. 480
Dollars	5696 72 Cents.

DIRECTIONS

for calculating the Premium or Discount.

In all cases where there is a fixed par of Exchange, and the variations in the rates of Exchange are regulated by a Premium or Discount, it is to be noticed, that this Premium or Discount is calculated upon the money of that place upon which the Bill is drawn. Thus with Canada, the United States, &c. if the Bill is drawn in Sterling, the Premium or Discount forms a per Centage upon the amount of the Bill, or the amount at Par, and it is to be added to or subtracted from it, to find the value in Currency.

But if the Bill is drawn in Currency, or an amount in Currency is to be reduced into Sterling, the per Centage of the rate is, for a Premium, to be added to 100, or for a Discount, to be subtracted from 100, and then as the sum or remainder is to 100, so is the given amount at Par* to the amount in Sterling.

EXAMPLE 1.

To find the value in Canada Currency of a Bill for £ 500 Sterling, at a Discount of $1\frac{1}{2}$ per Cent.

£	s	d	
500	0	0	Sterling.
7	10	0	Discount
<hr/>			
492	10	0	Net amount.
54	14	5	1-9 th.
<hr/>			
£ 547	4	5	Currency.
<hr/>			

* Sometimes it is better first to correct the Currency for the Premium or Discount, and then to reduce the product at Par into Sterling.

EXAMPLE 2.

To find the value in Jamaica Currency of a Bill for £ 500 Sterling, at a Premium of $12\frac{3}{4}$ per Cent.

£	s	d	
500	0	0	Sterling.
63	15	0	Premium.
<hr/>			
563	15	0	Amount.
	7		
<hr/>			
5)	3946	5 0	
<hr/>			
£	789	5 0	Currency.

EXAMPLE 3.

To find the value in Sterling £ 547 4 5 Canada Currency, at $1\frac{1}{2}$ per Cent Discount.

£ 100 less £ 1½ Discount = £ 98½				
£	£	£	s	d
If 98½	100	547	4	5 ?
Answer	£ 555 11 1	Net Value.		
Difference	55 11 1	1-10th.		
	£ 500 0 0	Sterling.		

EXAMPLE 4.

To find the value in Sterling of Dollars 4826 25 Cents, United States Currency, at a Premium of $10\frac{1}{2}$ per Cent.

D.	D.	D. C.
If 110½	100	4826 25 ?
Answer	Dollars 4367 65 Cents.	

£	£ s d
4367.65	
9	
<hr/>	
40)	39308.85
<hr/>	
Sterling	£ 982.721 = 982 14 5

EXERCISES.

Ex. 1. Find the amount of £ 400 Sterling, in Barbadoes Currency at $137\frac{1}{2}$ per Cent.

2. Find the amount of £ 1623 18 6 Grenada Currency at 225 per Cent.

3. Find the value in Quebec Currency of a Bill on London for £ 450 Sterling, at Par, and also at a Discount of $1\frac{1}{2}$ per Cent.

4. Find the amount in Sterling of £ 715 10 8 Canada Currency, at a Discount of $1\frac{1}{2}$ per Cent.

5. Find the amount in United States Currency, of a Bill on London for £ 220 10 0 Sterling, at a Premium of 11 per Cent.

6. Find the value in Sterling of U. S. Dollars 2000, at a Premium of $10\frac{1}{2}$ per Cent.

7. What is the value in Jamaica Currency of a Bill upon London for £ 300 Sterling, at a Premium of $13\frac{1}{2}$ per Cent?

8. What is the value in Sterling of £ 600 Jamaica Currency, at a Premium of $12\frac{1}{2}$ per Cent?

9. Dollars in Jamaica being valued at 6 s 8 d Currency, what will be the amount in Sterling of 1000 Dollars at a Premium on the Sterling of $14\frac{1}{2}$ per Cent, and what will be the value in Sterling of each Dollar?

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 PRODUCTS.

Ex. 1. £ 550 0 0 Barb. Curr.

2. £ 721 14 10 Sterling.

3. £ 500 0 0 at Par. £ 492 10 0 at  $1\frac{1}{2}$  per Ct.

4. £ 653 15 8 Sterling.

5. U. S. D. 1087 80 Cents.

6. £ 408 3 3 Sterling.

7. £ 475 13 0 Jam. Curr.

8. £ 380 19 1 Sterling.

9. £ 207 18 10 Sterling.

Value of each Dollar 4 s 2 d Sterling.

## SOUTH AMERICA.

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### SPANISH SETTLEMENTS.

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In Colombia, Buenos—Ayres, Chili, and Peru, as well as in Mexico in North America, the Dollar is the principal Integer of Account.—It is divided into 8 Reals each of 16 Quarts.

The Dollar of account or exchange is, nominally, the Hard or Mexican Dollar, or, what is reputed the same as that Coin, the Dollar of each of the Independent Governments.

Where a paper money has been created, the value of the Dollar of account depends upon the credit of the Paper, or the exchange it bears against Hard Dollars or Doubloons.

A late quotation from Buenos Ayres gave the following rates of Exchange, but except the rate upon London, they may be considered as nominal.

---

#### Buenos Ayres receives from

|                |             |     |                    |
|----------------|-------------|-----|--------------------|
| London         | 18½ Pence   | for | 1 Dollar in Paper. |
| Paris          | 1.85 Francs | —   | 1 Ditto            |
| Rio de Janeiro | 580 Reis    | —   | 1 Ditto            |
| United States  | 37½ Cents   | —   | 1 Ditto            |

Price of Ounces (Doubloons) from 44 to 48 Dollars each.

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### WEIGHTS AND MEASURES.

The same as those of Spain.

## PORTUGUESE SETTLEMENTS.

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### BRASIL.

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#### RIO DE JANEIRO AND BAHIA.

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The money of account is the Portuguese Milreis of 1000 Reis.

The value of this money is variable, as it is reckoned in Paper-money, which from its excessive issue has become reduced to a very considerable discount in relation to Specie.

According to the intrinsic value of the piece of 4000 Reis in Gold, which is £ 1 0 1½, the worth of a Milreis in Gold is 5 s 0½ d, but making the estimation from the 3 Pataca Piece or Brazilian Dollar, which is worth 50 d Sterling, and is rated at 960 Reis, the Milreis in Silver is about 52 d Sterling.

The Premium upon the former of these pieces was lately about 80 per Cent, and the value of the latter was about 1600 Reis, reducing the Milreis in Paper from 5 s 0½ d the value in Gold, to nearly 33½ d Sterling, and from 52 d the value in Silver, to 32½ d Sterling.

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#### COURSE OF EXCHANGE.

Rio de Janeiro receives from

London      31½ Pence      for      1 Milreis.

and gives to

Paris        290 Reis        for      1 Franc.

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The Weights and Long Measures of the Brazils are the same as those of Portugal, but the Measures of capacity are different.

#### AT RIO DE JANEIRO.

100 Medidas      =      59.54 Imperial Gallons.

100 Alqueires    =      110.96 Imperial Bushels.

## EXAMPLE 1.

To exchange Dollars 4726 5 R into Sterling at  $19\frac{1}{2}$  d

|                    | £     | s  | d              |           |                |
|--------------------|-------|----|----------------|-----------|----------------|
| $\frac{1}{20}$ - - | 4726  | 12 | 6              | amount at | 20 s           |
| $\frac{1}{2}$ - -  | 236   | 6  | $7\frac{1}{2}$ | —         | 12             |
| $\frac{1}{4}$ - -  | 118   | 3  | $3\frac{3}{4}$ | —         | 6              |
|                    | 29    | 10 | $9\frac{3}{4}$ | —         | $1\frac{1}{2}$ |
|                    | £ 384 | 0  | 9              | Sterling. |                |

## EXAMPLE 2.

To exchange Reis 14:089.447 into Sterling at  $31\frac{1}{2}$  d

|                    | £          |                   |                |
|--------------------|------------|-------------------|----------------|
| $\frac{1}{8}$ - -  | 14089.447  | amount at         | 20 s           |
| $\frac{1}{20}$ - - | 1761.181   | —                 | 30             |
|                    | 88.059     | —                 | $1\frac{1}{2}$ |
|                    | £ 1849.240 | = £ 1849 4 s 10 d |                |

## EXERCISES.

## Exchange

- Ex. 1. Dollars 10000 into Sterling at  $18\frac{1}{4}$   
 2. Dollars 8282 3 R into Sterling at  $17\frac{3}{4}$   
 3. Reis 1:000.000 into Sterling at  $41\frac{1}{2}$   
 4. Reis 2:314.636 into Sterling at  $35\frac{3}{4}$

## PRODUCTS.

- Ex. 1. £ 760 8 4      Ex. 3. £ 172 18 4  
 2. £ 612 11 0      4. £ 344 15 8



## EAST INDIES.

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### CALCUTTA. MADRAS. BOMBAY.

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#### CALCUTTA.

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|          |   |          |
|----------|---|----------|
| 12 Pice  | = | 1 Anna.  |
| 16 Annas | = | 1 Rupee. |

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The Sicca Rupee is the Money of Exchange, and is the Official Money of Account. Its intrinsic value as a Silver Coin, is nearly 2 s Sterling.

The Current Rupee is a nominal money, valued at 16 per Cent below the Sicca Rupee, 100 Sicca Rupees being equal to 116 Current Rupees.

The Gold Mohur is nominally worth 16 Sicca Rupees. Its full value is about 33 s 4 d Sterling, making the nominal Gold valuation of the Sicca Rupee, 2 s 1 d Sterling; but as the new Mohur is commonly worth about 17 Sicca Rupees, this valuation is reduced to 1 s 11½ d Sterling.

A Lac is 100.000 Rupees. A Crore is 10 Millions.

The usual time for Bills on London is 6 months' sight.

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#### WEIGHTS AND MEASURES.

|                               |   |                          |
|-------------------------------|---|--------------------------|
| The Factory Maund of 40 Seers | = | 74 lb 10 oz Avoirdupois. |
| The Bazaar Maund              | = | 82 lb 2 oz Avoirdupois.  |
| The Haut or Cubit             | = | 18 Inches English.       |
| The Guz.                      | = | 36 Inches.               |

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N. B. 100 Bazaar Maunds are equal to 110 Fands or Factory Maunds, and 3 Fands are equal to 224 lb Avoirdupois.

The Bazaar Maund is also 40 Seers each of 16 Chittacks.

## MADRAS.

The Money of Account, in new Currency, is in Rupees, divided into Annas and Pice as at Calcutta.—The late Money of Account, which is still partially also in use, was in Pagodas of 42 Fanams each of 80 Cash.

100 Pagodas are reckoned equal to 350 Rupees, the Rupee being equal to 12 Fanams.

The value of the Silver Rupee, Madras Currency, is estimated at 1 s 10½ d Sterling.

The Madras Mohur, nominally worth 15 Silver Rupees, is valued at 29 s 1½ d Sterling.

## WEIGHTS AND MEASURES.

|                        |   |                        |
|------------------------|---|------------------------|
| The Candy of 20 Maunds | = | 500 lb Avoirdupois.    |
| The Garee of 80 Parahs | = | 16½ Imperial Quarters. |
| The Covid for Cloth    | = | 18 English Inches.     |

## BOMBAY.

The Money of Account is in Rupees, Bombay Currency, divided into 4 Quarters each of 100 Reas.

The Silver Rupee, Bombay Currency, is very nearly of the same value as the Silver Rupee, Madras Currency, or 1 s 10½ d Sterling.

The Bombay Gold Mohur, is also very nearly the same as that of Madras.

## WEIGHTS AND MEASURES.

|                        |   |                      |
|------------------------|---|----------------------|
| The Candy of 20 Mannds | = | 560 lb Avoirdupois.  |
| The Candy of 8 Parahs  | = | 156½ lb Avoirdupois. |
| The Haut or Covid      | = | 18 English Inches.   |

## CAPE OF GOOD HOPE.

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|             |   |              |
|-------------|---|--------------|
| 6 Stivers   | = | 1 Skilling.  |
| 8 Skillings | = | 1 Rixdollar. |

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The Par of the Rixdollar, which is a paper Currency, is fixed at 1 s 6 d Sterling, the English Shilling being valued at 32 Stivers Currency. Accounts are now generally kept in British Currency.

### WEIGHTS AND MEASURES.

The English Weights and Measures are in general use here, except for Wines, which are commonly sold by the Leaguer.

This Measure is reckoned the same as the late Amsterdam Leaguer of 15 Ankers; as such, the contents are equal to 128.12 Imperial Gallons, or 153½ Wine Gallons, but the common estimation is 152 Wine Gallons.

### EXERCISES.

Ex. 1. What is the amount in Sterling, of Sicca Rupees 11864 12 Annas, Bengal Currency, at 1 s 10½ d Sterling per Sicca Rupee?

2. What is the amount in Sterling, of Pagodas 1962 25 Fan. 40 Cash, Madras Currency, exchange at 1 s 9½ d per Rupee?

3. What is the amount in Sterling of Rupees 6688 1 Qr. 75 Reas, Bombay Currency, exchange at 1 s 9½ d per Rupee?

4. What is the amount in Sterling, of Rixdollars 5184 4 Sk. Cape Currency at par?

### PRODUCTS.

|                    |                   |
|--------------------|-------------------|
| Ex. 1. £ 1112 6 5. | Ex. 2. £ 615 7 2. |
| 3. 606 2 10.       | 4. 388 16 9.      |

## CROSS EXCHANGES:

Cross Exchanges are the Exchanges between Foreign Countries. Thus, at London the Exchanges between Paris and Hamburg, Paris and Amsterdam, &c. are termed Cross Exchanges.

### EXAMPLES.

#### PARIS.

To exchange 10000 Francs with

HAMBURG, at 185

|        |  |     |  |         |
|--------|--|-----|--|---------|
| Frs    |  | Mks |  | Frs     |
| If 185 |  | 100 |  | 10000 ? |

Marks 5405 6 Sch. Banco.

AMSTERDAM, at  $57\frac{1}{2}$

|        |  |                 |  |         |
|--------|--|-----------------|--|---------|
| Frs    |  | Flor.           |  | Frs     |
| If 120 |  | $57\frac{1}{2}$ |  | 10000 ? |

Florins 4791 67 Cents.

FRANKFORT, at  $2\frac{3}{4}$  Discount.

|                     |   |                  |             |
|---------------------|---|------------------|-------------|
|                     |   | 10000            | Fr. ?       |
| Fr. $97\frac{1}{2}$ | — | 100              | in Bill     |
| Fr. 400             | — | $103\frac{1}{2}$ | Rixd. W. Z. |
| 389                 | ) | $1035000$        |             |

R. Doll. 2660 60 Kr. W. Z.

Note. For an explanation of the rates employed in Cross Exchanges, the Formula of the Course of Exchange of the place making the operation is to be consulted.

# AMSTERDAM.

To exchange 10000 Florins with

PARIS, at 57

|       |   |     |   |         |
|-------|---|-----|---|---------|
| Fl.   | — | Fr. | — | Fl.     |
| If 57 |   | 120 |   | 10000 ? |

|        |       |           |
|--------|-------|-----------|
|        | Fr.   |           |
| 57     | )     | 1200000   |
|        |       | <hr/>     |
| Francs | 21052 | 63 Cents. |

HAMBURG, at 35

|       |   |     |   |         |
|-------|---|-----|---|---------|
| Fl.   | — | Mks | — | Fl.     |
| If 35 |   | 40  |   | 10000 ? |
| 7     |   | 8   |   |         |

|                      |              |
|----------------------|--------------|
|                      | Mks          |
| $\frac{1}{7}$ —10000 |              |
|                      | <hr/>        |
|                      | 1428 9       |
| Marks                | 11428 9 Sch. |

FRANKFORT, at  $36\frac{1}{2}$

|                    |   |       |   |         |
|--------------------|---|-------|---|---------|
| Fl.                | — | R. D. | — | Fl.     |
| If $36\frac{1}{2}$ |   | 20    |   | 10000 ? |
| 145                |   | 80    |   |         |

|            |                   |
|------------|-------------------|
|            | R. D.             |
| 145        | ) 800000          |
|            | <hr/>             |
| Rixdollars | 5517 22 Kreuzers. |

# HAMBURG.

To exchange 10000 Marks Banco with

PARIS, at  $188\frac{1}{2}$

| Mks             | Fr.              | Mks     |
|-----------------|------------------|---------|
| If 100          | $188\frac{1}{2}$ | 10000 ? |
| Francs 18850.00 |                  |         |

AMSTERDAM, at  $35\frac{1}{2}$

| Mks             | Fl. C. | Mks     |
|-----------------|--------|---------|
| If 40           | 35 50  | 10000 ? |
| Flor.           |        |         |
| 40 ) 355000.0   |        |         |
| Florins 8875.00 |        |         |

FRANKFORT, at  $148\frac{1}{4}$

| Mks                 | R. D.            | Mks     |
|---------------------|------------------|---------|
| If 300              | $148\frac{1}{4}$ | 10000 ? |
| R. D.               |                  |         |
| $\frac{1}{4}$ 10000 |                  |         |
| $148\frac{1}{4}$    |                  |         |
| 1480000             |                  |         |
| 2500                |                  |         |
| 300 ) 1482500       |                  |         |
| Rixdollars 4975 0   |                  |         |

# FRANKFORT ON THE MAIN.

To exchange 10000 Rixdollars W. Z. with

PARIS, at  $78\frac{3}{4}$

| R. D.              |       | Fr.            |       | R. D.   |
|--------------------|-------|----------------|-------|---------|
| If $78\frac{3}{4}$ | _____ | 300            | _____ | 10000 ? |
| 315                |       | 315 ) 12000000 |       |         |
| Francs             |       | 38095 24       | Cents |         |

AMSTERDAM, at  $139\frac{1}{2}$

| R. D.               |       | Fl.            |       | R. D.   |
|---------------------|-------|----------------|-------|---------|
| If $139\frac{1}{2}$ | _____ | 250            | _____ | 10000 ? |
| 558                 |       | 1000           |       |         |
| Flor.               |       | 558 ) 10000000 |       |         |
| Florins             |       | 17921 14       | Cents |         |

HAMBURG, at 146

| R. D.  |       | Mks      |             | R. D.   |
|--------|-------|----------|-------------|---------|
| If 146 | _____ | 300      | _____       | 10000 ? |
| 146    |       | 3000000  |             |         |
| Marks  |       | 20547 15 | Sch. Banco. |         |

## EXERCISES ON CROSS EXCHANGES.

Ex. 1. Exchange Francs 14172 84 Cts at PARIS with

|                                       |                           |
|---------------------------------------|---------------------------|
| AMSTERDAM, at $57\frac{1}{2}$         | VIENNA, at 253            |
| If 120 Francs — $57\frac{1}{2}$ Flor. | If 253 Francs — 100 Flor. |
| — Francs 14172.84 ?                   | — Francs 14172.84 ?       |

|                                      |                                    |
|--------------------------------------|------------------------------------|
| HAMBURG, at $185\frac{1}{2}$         | GENOA, at $\frac{3}{4}$            |
| If $185\frac{1}{2}$ Francs — 100 Mks | If $100\frac{3}{4}$ Frs — 100 Lire |
| — Francs 14172.84 ?                  | — Francs 14172.84 ?                |

|                                        |                           |
|----------------------------------------|---------------------------|
| FRANKFORT, at 2                        | LEGHORN, at 510           |
| If 400 Francs — $103\frac{1}{2}$ R. D. | If 510 Francs — 100 Pezze |
| and 98 R. D. — 100 R. D.               | — Francs 14172.84 ?       |
| — Francs 14172.84 ?                    |                           |

|                                         |                                          |
|-----------------------------------------|------------------------------------------|
| PETERSBURG, at $107\frac{1}{2}$         | MILAN, at $84\frac{1}{2}$                |
| If $107\frac{1}{2}$ Francs — 100 Rubles | If $84\frac{1}{2}$ Francs — 100 Lire Au. |
| — Francs 14172.84 ?                     | — Francs 14172.84 ?                      |

Ex. 2. Exchange Florins 4769 50 Cts at AMSTERDAM with

|                                       |                         |
|---------------------------------------|-------------------------|
| PARIS, at $57\frac{1}{2}$             | NAPLES, at 80           |
| If $57\frac{1}{2}$ Flor. — 120 Francs | If 80 Flor. — 40 Ducats |
| — Flor. 4769.50 ?                     | — Flor. 4769.50 ?       |

|                                           |                                     |
|-------------------------------------------|-------------------------------------|
| FRANKFORT, at $36\frac{1}{2}$             | GENOA, at $47\frac{1}{2}$           |
| If $36\frac{1}{2}$ Flor. — 20 R. D. W. Z. | If $47\frac{1}{2}$ Flor. — 100 Lire |
| — Flor. 4769.50 ?                         | — Flor. 4769.50 ?                   |

|                                     |                        |
|-------------------------------------|------------------------|
| HAMBURG, at $35\frac{1}{2}$         | LEGHORN, at 97         |
| If $35\frac{1}{2}$ Flor. — 40 Marks | If 97 Flor. — 40 Pezze |
| — Flor. 4769.50 ?                   | — Flor. 4769.50 ?      |

|                                           |                           |
|-------------------------------------------|---------------------------|
| VIENNA, at $36\frac{1}{2}$                | LISBON, at 37             |
| If $36\frac{1}{2}$ N. Flor. — 30 A. Flor. | If 37 Flor. — 40 Crusados |
| — N. F. 4769.50 ?                         | — Flor. 4769.50 ?         |



Ex. 3. Exchange Banco Marks 5486 12 Sch. at HAMBURG,  
with

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| PARIS, at $187\frac{3}{4}$        | GENOA, at $187\frac{1}{4}$           |
| If 100 Mks — $187\frac{3}{4}$ Frs | If 100 Mks — $187\frac{1}{4}$ Lire   |
| — Marks 5486 12 ?                 | — Marks 5486 12 ?                    |
| AMSTERDAM, at $35\frac{1}{4}$     | LEGHORN, at $43\frac{1}{4}$          |
| If 40 Mks — $35\frac{1}{4}$ Flor. | If $43\frac{1}{4}$ Schill. — 1 Pezza |
| — Marks 5486 12 ?                 | — Marks 5486 12 ?                    |
| FRANKFORT, at 148                 | BERLIN, at 153                       |
| If 300 Mks — 148 R. D.            | If 300 Mks — 153 Pruss. D.           |
| — Marks 5486 12 ?                 | — Marks 5486 12 ?                    |
| VIENNA, at 147                    | PETERSBURG, at $9\frac{1}{2}$        |
| If 200 Mks — 147 Flor.            | If $9\frac{1}{2}$ Schill. — 1 Ruble  |
| — Marks 5486 12 ?                 | — Marks 5486 12 ?                    |

Ex. 4. Exchange Rixd. 8128 72 Kr. W. Z. at FRANKFORT,  
with

|                                       |                                          |
|---------------------------------------|------------------------------------------|
| PARIS, at $78\frac{3}{4}$             | BREMEN, at $109\frac{3}{4}$              |
| If $78\frac{3}{4}$ R. D. — 300 Frs    | If $109\frac{3}{4}$ R. D. — 100 R. D.    |
| — Rixd. 8128 72 ?                     | — R. D. 8128 72 ?                        |
| AMSTERDAM, at $139\frac{1}{2}$        | HAMBURG, at 146                          |
| If $139\frac{1}{2}$ R. D. — 250 Flor. | If 146 R. D. — 300 Mks                   |
| — Rixd. 8128 72 ?                     | — Rixd. 8128 72 ?                        |
| AUGSBURG, at $100\frac{3}{4}$         | BERLIN, at $104\frac{1}{2}$ Kr.          |
| If $100\frac{3}{4}$ R. D. — 150 Flor. | If 1 R. D. — 90 Kr. W. Z.                |
| — Rixd. 8128 72 ?                     | 46 K. W. Z. — 55 K. 24 GF.               |
|                                       | $104\frac{1}{2}$ K. 24 GF. — 1 Pruss. D. |
|                                       | — Rixd. 8128 72 W. Z ?                   |

**Ex. 5. Exchange 8000 Lire Nuove at GENOA, with**

|                           |                           |
|---------------------------|---------------------------|
| <b>PARIS, at 99</b>       | <b>VIENNA. at 252</b>     |
| If 99 Lire — 100 Francs   | If 252 Lire — 100 Florins |
| — Lire 8000 ?             | — Lire 8000 ?             |
| <b>AMSTERDAM, at 207</b>  | <b>LEGHORN, at 512</b>    |
| If 207 Lire — 100 Florins | If 512 Lire — 100 Pezze   |
| — Lire 8000 ?             | — Lire 8000 ?             |
| <b>HAMBURG, at 182</b>    | <b>LISBON, at 480</b>     |
| If 182 Lire — 100 Marks   | If 480 Lire — 100 Milreis |
| — Lire 8000 ?             | — Lire 8000 ?             |

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PRODUCTS.

Ex. 1. Flor.	6761 83 Cts.	Flor.	5601 55 Kr.
Mks	7650 10 Sch.	Lire	14067 33 Cent.
R. D.	3742 6 Kr.	Pezze	2778 19 s 9 d.
Rub.	13184 04 Cop.	Lire	16772 59 Cent.
<hr/>			
Ex. 2. Frs.	9997 21 Cts.	Ducats	2384 75 Grani
R. D.	2613 38 Kr.	Lire	10094 18 Cent.
Mks.	5374 1 Sch.	Pezze	1966 16 s 1 d.
Flor.	3947 10 Kr.	Reis	2:062.486
<hr/>			
Ex. 3. Frs.	10301 37 Cts.	Lire	10273 94 Cent.
Flor.	4835 20 Cts.	Pezze	2029 15 s 7 d.
R. D.	2706 72 Kr.	Pruss. D.	2798 7 Gros.
Flor.	4032 46 Kr.	Rubles	9490 59 Cop.
<hr/>			
Ex. 4. Frs.	30966 86 Cts.	R. D.	7406 47 Grotes.
Flor.	14567 74 Cts.	Mks	16703 0 Schill.
Flor.	12102 26 Kr.	Pruss. D.	8370 19 Gros.
<hr/>			
Ex. 5. Frs.	8080 81 Cts.	Flor.	3174 36 Kr.
Flor.	3864 73 Cts.	Pezze	1562 10 Soldi
Mks	4395 10 Sch.	Reis	1:666.667

INDIRECT EXCHANGES,

OR

ARBITRATIONS OF EXCHANGE.

Indirect Exchanges are operations of exchange between two countries, through the medium either of one other country, or of several other countries, and the proportional rates of exchange deduced from them, are called Arbitrated Rates of Exchange.

Arbitrations of Exchange, or the calculations of arbitrated rates, are therefore either Simple or Compound.

SIMPLE ARBITRATIONS.

The Rate of Exchange produced by drafts or remittances between two places, is called a Simple Arbitrated Rate, when there is only one intermediate place employed in the operation; thus the rate of Exchange between London and Paris, obtained by the purchase in London of Bills upon Amsterdam, and by the sale of these Bills in Paris, is called a Simple Arbitrated Rate.

The object of the calculation of an Arbitrated Rate of Exchange, is to find whether it will produce a better rate, for either remitting or drawing, than is afforded by the direct rate; and the object of the calculations of several rates, is to find which is the best for either of the same purposes.

In making these comparisons, in order to guide our operations, it is necessary for us to inquire,

1st—Whether the operation is, on the one hand, to be a remittance, or, on the other, to be a draft or return.

2ndly—Whether the variable price, or the rate of exchange, is in Foreign money or in Sterling.

Then we have to draw the following conclusions:

For remittances,

With a Foreign rate, any arbitrated rate is better than the direct rate, if it is greater than the direct rate.

With a Sterling rate, any arbitrated rate is better than the direct rate, if it is less than the direct rate.

Because, in either case, a given sum in Sterling will produce a greater sum in Foreign money, or a given sum in Foreign money will cost a less sum in Sterling.

For drafts or returns,

With a Foreign rate, any arbitrated rate is better which is less than the direct rate.

With a Sterling rate, any arbitrated rate is better which is greater than the direct rate.

Because we shall obtain, in either case, a greater sum in Sterling from a given sum that we draw for in Foreign money.

With inquiries of this nature is generally connected, a comparison between the direct rates of the two places concerned, for the purpose of determining, for either remittances or drafts, which place should make the operation.—Thus for remittances to Paris, or to create a fund in Paris, the direct rates are compared to determine whether we, in London, should remit to Paris, or whether our correspondents in Paris should draw upon us; and of course the reverse, if the remittance is to be made from Paris, or the fund is to be created in London.—In either case, and according to whether the variable price is in Foreign

money or Sterling, we must be guided by similar considerations to the preceding ; namely, for remittances abroad to prefer that mode which gives the greatest sum in Foreign money, or costs the least sum in Sterling ; and for returns or remittances to this Country, to prefer that which costs the least Foreign money, or yields the greatest sum in Sterling.

For either direct operations, or for comparisons with the arbitrated rates, the direct rates must be discounted or reduced to Short Prices,* because, for the former purposes, the interest for the time which the Bill has to run affects the price,† operating contrary ways upon the rates in the two countries, and, for the latter, the arbitrated rates are necessarily calculated for present money, as Bills are never sold on what may be called credit : and it is here necessary also to observe, that in making remittances of indirect Paper upon speculation, Bills at a long date are preferable to those at a short date, because more time is afforded, if it should be judged proper to wait for an improvement in the rate of Exchange.

Bills at sight are seldom or never used in speculations of this kind.

In order, therefore, to admit of a proper comparison between the different sorts of Paper, the direct rates also at the two places of operation should be taken at a long date, as 3 months, and then discounted, either according to the rate charged by the two houses of business, or at the market rate of discount.

To show how to apply this discount properly, we will take the rates in a following example, page 95

London on Paris at 3 months is quoted Fr. 25 55 Cents.

Paris on London at 3 months — Fr. 25 10

* Short prices are the prices of Bills at sight, or at short sight, which is generally 3 days' sight.

† If the time is short, it is not in this country taken into consideration ; thus a Bill at 90 days' date generally obtains as good a price as a Bill at 75 days' date ; however, under equal circumstances in other respects, the latter Bill would obtain a preference for remittances abroad, because it would there usually sell for something more than the Bill at the longer date.

The discount for 3 months is there stated to be taken at 1 per Cent, or 25 Cents,* which is taken from the London rate, and added to the Paris rate, to make them Short or Cash rates; rendering the one Frs. 25 30 Cents, and the other Frs. 25 35 Cents.

The Interest is taken from the London rate, because if I send the Bill to Paris, and get it discounted there, the Interest will be deducted; but it is added to the Paris rate, because, if at Paris I want a Bill upon London at sight, I shall have more French money to pay for it, than I should have to pay for a Bill at 3 months.

It is evident, that if the variable price is in Sterling, as the rate with Madrid, the allowance for Interest must be reversed, and must be added to the London price, and subtracted from the price abroad.

It now remains to exhibit the usual method of stating and working by the Chain Rule, or Rule of Equations, the arithmetical Questions of arbitrated rates.—The requisite data in these operations, are, 1st, The fixed price of the rate between the two places, of which fixed price the arbitrated variable price is required. 2ndly, The buying price at the place where the operation commences. 3rdly, The selling price at the other place concerned; and, occasionally, there are intermediate or auxiliary rates required, to connect the prices, either with each other or with the fixed price, or to bring out the result in the proper money of the variable price.

The contractions that may be practised, and the method of finding and employing fixed numbers, we shall show in the following calculation.

* To be very accurate, the time which the post takes between the two places should be deducted from the time which the Bill has to run.

The Interest is here reckoned at 4 per Cent per Annum, but perhaps the more usual rate is 5 per Cent per Annum; and it is to be noticed, that although the Interest for the difference of the time is, strictly speaking, the proper difference in the rates, as far as they are made subjects of calculation, yet in the actual negotiation of Bills the difference is generally less, because Bills at sight are usually in less demand than Bills at a long date.

EXAMPLE

Of the arrangement of the terms of an Equation for finding an Arbitrated Rate.

To find the Arbitrated Rate of Exchange between London and Frankfort, or the number of Batzen per £ Sterling, which may be produced by Bills upon Berlin, bought in London at the rate of 6 Pruss. Dollars 25 Silver Groschen per £ Sterling, and sold in Frankfort at 104 Kreuzers in 24 Guldenfuss.

We have here,

- 1st —The fixed Price, viz. 1 £ Sterling.
 2ndly—The buying Price, — 6 D. 25 G. per £ Ster.
 3rdly—The selling Price, — 104 Kr. per Dollar.

but as the rate between London and Frankfort is expressed in Batzen, and the selling price is in Kreuzers, we have to add also this rate,

4 Kreuzers are 1 Batz ;

and, further, as the rate with London is in Wechselzahlung, while the selling price is in 24 G. F. we must add this rate,

55 Batzen in 24 G. F. are 46 Batzen in W. Z.

We then have to arrange these data, so that the terms may lead from one to the other, and that the first may be the fixed price, and the last the money in which it is required to find the arbitrated value, thus ;

			1 £ Sterling ?
	£ 1	— * 6	25 Doll. and Gr. = 205 Gros.
30 Gr. = Doll.	1	— *	104 Kreuzers.
	Kreuz.	4	— 1 Batz in 24 G. F.
in 24 G. F.	55	—	46 Batzen in W. Z.

Having stated the terms of the equation, we have here reduced the Prussian Dollars into Groschen, at 30 to the Dollar, but we might have retained the Dollars, and reckoned 6 Doll. 25 Gr. as $6\frac{25}{30}$ or $6\frac{5}{6}$ Dollars, without reducing the 1 Dollar to Groschen.

The whole being thus arranged and prepared for calculation, we may find the result as usual, by multiplying into one product the consequents, or right hand terms, and dividing it by the product of a similar multiplication of the antecedents, or left hand terms; or we may divide any two terms on opposite sides, by any number that will exactly divide them, and use the quotients in their stead, which may be done either in the equation, or in the following fractional form of arranging the numbers operated with.

$$\begin{array}{rcccl} & 26 & 41 & & \\ 46 \times 104 \times 205 & & 49036 & = & \\ \hline 55 \times 4 \times 30 & & 330 & = & 148.593 \\ 11 & & & & \end{array}$$

We here divide 104 and 4 by 4, and 205 and 55 by 5, and the operation is then reduced to the multiplication of 46 by 26 and by 41, and the division of the product by 11 times 30, or 330, as

$$\begin{array}{r} 46 \\ 26 \\ \hline 1196 \\ 41 \\ \hline 330 \) \ 49036 \\ \hline \end{array}$$

Result 148.593 &c. Batzen.

It must be observed, that when the Equation is used for arbitrated rates, instead of a general reduction of the terms, those which are fixed or invariable are usually compounded into a fixed number, and the variable terms or rates are applied to it, as multipliers or divisors, according to which side of the Equation they belong.

Thus taking from the preceding Equation the invariable terms, and compounding them in the following manner, we obtain the following fixed number :

$$\begin{array}{r} 55 \\ 120 = 4 \times 30 \\ \hline 6600 \end{array}) 46.000$$

Fixed Number 0.0069697 nearly.

Upon this fixed number the variable numbers of the two rates are used as multipliers, both being upon the right-hand side of the equation, thus ;

$$\begin{array}{r} \text{Fixed Number } 0.0069697 * \text{ for Grotschen} \\ 205 \\ \hline 348485 \\ 139394 \\ \hline 1.4287885 \\ 104 \\ \hline \text{Batzen } 148.594 \quad \text{Result} \end{array}$$

This form may be varied by not reducing the Dollars, then we have

$$\begin{array}{r} 55 \\ 4 \\ \hline 220 \end{array}) 46.0$$

Fixed Number 0.2 $\frac{1}{11}$ for Dollars.

* The variable terms are, in the preceding, and also in every following, Equation, marked with an asterisk. It is not the common practice to give a decimal form to fixed numbers for finding arbitrated rates, because the number of places of whole numbers is always known, therefore the above would generally be given 69697 without any valuation.

And on account of its form this number is best used as a multiplier ; thus taking from the equation the numbers belonging to the variable terms, viz. 104, the number of Kreuzers, and $6\frac{5}{8}$, the number of Dollars, we find their product, and multiply it by the fixed number, thus ;

$$\begin{array}{r}
 \frac{1}{3} - \frac{1}{2} - 104 \\
 \qquad 6\frac{5}{8} \text{ for 6 D. 25 G.} \\
 \hline
 624 \\
 52 \\
 34.66 \\
 \hline
 \frac{1}{11} - 710.66 \\
 , \quad 0.2 \frac{1}{11} \text{ Fixed Number} \\
 \hline
 142.132 \\
 , 6.461 \\
 \hline
 \text{Batzen } 148.593 \text{ Result} \\
 \hline
 \hline
 \end{array}$$

We shall now show the application of these principles to the calculation of arbitrated Rates of Exchange between London and Paris, in Bills upon Amsterdam, Hamburg, Frankfort, and Leghorn, and having compared the results in the manner adopted by experienced practical Cambists, we shall further elucidate them by separate statements for each of the most usual operations.

EXAMPLE 1.

From the following rates of Bills in London and Paris, it is required to find,

1st—Whether, having money to transmit from London to Paris, it will be better for me to remit direct Bills to Paris, or for my correspondents in Paris to draw upon me in London, allowing interest for the time the Bills have to run at 4 per Cent per Annum.

2ndly—Whether, having money to draw from Paris, it will be better for my correspondents to make me remittances, or for me to draw upon them.

3rdly—If I have to make remittances to Paris, whether any indirect rate will answer better than the rates of direct Bills.

4thly—If I have to obtain returns from Paris, whether any indirect rate will answer better than either of the direct rates.

RATES OF EXCHANGE.

London, June 17.		Paris, June 14.	
25.55	. . .	Paris at 3 months	1
12 2	. . .	Amsterdam . . .	57½
13 10½	. . .	Hamburg . . .	184
151	. . .	Frankfort . . .	2 per Cent
48¾	. . .	Leghorn . . .	509
		London at 3 months .	25.10

REDUCTION OF THE DIRECT RATES.

The Direct Paper being at 3 months, the Interest upon it, at 4 per Cent per Annum, is 1 per Cent, or to either rate about 25 Cents.

London on Paris — Fr 25.55 at 3 mo. — Fr 25.30 Short.
 Paris on London — Fr 25.10 Do — Fr 25.35 Short.

WORK OF THE EQUATIONS.

AMSTERDAM.

$$\begin{array}{rcl}
 & & 1 \text{ £ ?} \\
 1 & - & * 12 \quad 2 \text{ Flor. and St.} = 12.1 \text{ Fl.} \\
 \text{Flor. } 57\frac{1}{2} & - & 120 \text{ Francs.} \\
 \text{Fr. } 120 \times 12.1 \div 57\frac{1}{2} & = & 25.25 \text{ Francs.}
 \end{array}$$

HAMBURG.

$$\begin{array}{rcl}
 & & 1 \text{ £ ?} \\
 1 & - & * 13 \quad 10\frac{1}{4} \text{ Mks and Sc.} = 218\frac{1}{4} \text{ Sc.} \\
 \text{Sc. } 1600 = \text{Mks } 100 & - & * 184 \text{ Francs.} \\
 \text{Fr. } 184 \times 218\frac{1}{4} \div 1600 & = & 25.10 \text{ Francs.}
 \end{array}$$

FRANKFORT.

$$\begin{array}{rcl}
 & & 1 \text{ £ ?} \\
 1 & - & * 151 \text{ Batzen W. Z.} \\
 90 & - & 4 \text{ Rixdollars.} \\
 103\frac{1}{2} & - & 400 \text{ Francs in Frankfort.} \\
 4 \times 400 \div 103\frac{1}{2} \times 90 & = & 17176 \text{ Fixed Number.} \\
 17176 \times 151 & = & 25.93\frac{1}{2} \\
 2 \text{ per Cent Discount} & & 51\frac{1}{2} \\
 & & \text{Francs } 25.42 \text{ Cents.}
 \end{array}$$

LEGHORN.

$$\begin{array}{rcl}
 & & 1 \text{ £ ?} \\
 1 & - & 240 \text{ Pence.} \\
 48\frac{3}{4} * & - & 1 \text{ Pezza.} \\
 1 & - & * 509 \text{ Centimes.} \\
 \text{Fr. } 5.00 \times 240 \div 48\frac{3}{4} & = & 25.06 \text{ Francs.}
 \end{array}$$

COMPARISON OF THE RESULTS OR ARBITRATED RATES.

				Results.
London	3 mo.	25.55	—	Short Frs. 25.30 direct.
Amsterdam	. 12	2	—	57½ — 25.25
Hamburg	. . 13	10½	—	184 — 25.10
Frankfort	. .	151	—	2 — 25.42 highest.
Leghorn	. .	48¾	—	509 — 25.06 lowest.
Paris	3 mo.	25.10	—	Short — 25.35 direct.

FOR DIRECT PAPER.

It appears from the direct rates between London and Paris, at 25.30 and 25.35, that

1st. To remit or transfer money from London to Paris, it is better for Paris to draw upon London at 25.35 Short, than for London to remit to Paris at 25.30 Short, because by the former operation there will be made 5 Cents per £, or about $\frac{1}{2}$ per Cent more than by the latter.

2ndly. To have returns from Paris, or to remit or transfer money from Paris to London, it is better, by the same 5 Cents, for London to draw upon Paris, than for Paris to remit to London; because the Bills will cost so much less French money, or produce the same proportional part more in Sterling.

FOR INDIRECT PAPER

For remittances to Paris, or to create a fund in Paris, it appears, from the arbitrated results, that Bills upon Frankfort bought in London at 151 Batzen per £ Sterling, and sold in Paris at 2 per Cent Discount, will produce 12 Cents, or very nearly $\frac{1}{2}$ per Cent* more than direct remittances from London to Paris; or they will produce 7 Cents, which are about

* If 1-10th per Cent be deducted for extra brokerage, this and the following difference will be reduced to 4-10ths per Cent and 1-16th per Cent.

9—32 uds per Cent more than is yielded by direct drafts of Paris upon London.

For returns from Paris, or to create a fund in London, it appears, from the arbitrated results, that Bills on Leghorn bought in Paris at 509 Cents per Pezza, and sold in London at 48 $\frac{3}{4}$ Pence per Pezza, will cost 29 Cents, or nearly 1 $\frac{1}{8}$ per Cent less than direct Bills from Paris; and give a profit of 24 Cents, or nearly 1 per Cent more than will be obtained by Drafts from London on Paris.

In this manner the investigation is conducted, when the Exchanges are tried for a speculation in Bills through intermediate places,* but to determine upon the propriety of making it, independent of the possible changes in the rates, it is necessary to take the charges into consideration.

The regular charges are, 1-10th per Cent for Brokerage upon each purchase or Sale—Stamps upon Drafts—and if the business is conducted by an Agent, one quarter, one third, or one half per Cent according to agreement, for Commission; but it is not often that business to a great extent of this sort is done but between branches of the same house, on account of this charge for Commission too much diminishing the small rate of profit which such operations commonly even at best afford. The Interest of the money laid out is also to be taken into consideration, but the amount necessarily depends upon the promptness of the return.

To elucidate the preceding calculations and remarks, we will examine the four following suppositions;

* It is to be noticed that it is common in speaking of operations with indirect Paper of any place, to say that the operation is made through that place; as operations between London and Paris with Amsterdam Paper, are said to be through Amsterdam. However, to entirely coincide with this term, we must suppose that the fund which is to be created in Paris, is formed by our remitting direct Paper to Amsterdam, and either having the proceeds forwarded to Paris, or directing our correspondents in Paris to draw for them upon the Amsterdam House. Either this, or the supposition of the purchase and remittance of Amsterdam Bills to Paris, produces the same arbitrated rate, but the latter operation being less complicated is by far the more common, and it is also attended with fewer charges.

EXAMPLE 2.

DIRECT REMITTANCES AND DRAFTS.

£ 1000 remitted to Paris, in direct Bills,	
at 25.55 will produce	Francs 25550.00
If turned into Cash on arrival, there will be	
to deduct 3 months' Interest, which	
at 4 per Cent is	255.50
	<hr/>
Net—Francs	25294.50
	<hr/>

£ 1000 upon London sold in Paris at	
25.10 will produce	Francs 25100.00
Add for the loss of 3 months' Interest be-	
fore the bills will be at maturity	251.00
	<hr/>
Whole Expense	25351.00
(as above) Net Proceeds	25294.50
	<hr/>
Difference—Francs	56.50
	<hr/>

Which difference upon 25000 Francs is about 9-40ths per Cent.

If, therefore, I wish to create a fund in Paris, I shall obtain more by Paris drawing, than by my remitting.

On the other hand, if I wish to draw money from Paris, it will cost me less to procure £ 1000 by my drawing than by Paris remitting.

The Brokerage is either way the same, and therefore is not brought into the calculation.

EXAMPLE 3.

INDIRECT REMITTANCES.

£ 1000 laid out in London in Bills upon Frankfort at 151 Batzen per £ Sterling, and sold in Paris at 2 per Cent Discount, will produce at 25.42		Francs	25420.00
Deduct Brokerage 1 per 1000			25.42
		Net	25394.58
Direct Bills, as before, will yield			25294.50
		Difference—Francs	100.08

This difference upon 25000 Francs is 1-250 th, or 4-10 ths per Cent profit; including the charge for extra Brokerage, because direct bills have only one Brokerage, viz. on buying, but indirect bills have one Brokerage on buying and another on selling.

EXAMPLE 4.

INDIRECT RETURNS.

£ 1000 to be made in London by Bills upon Leghorn bought in Paris at 509 Centimes per Pezza, and sold in London at 48 $\frac{3}{4}$ d per Pezza, will require at 25.06		Francs	25060.00
Add for extra Brokerage			25.06
			25085.06
Direct Bills, as before, will require			25351.00
		Difference—Francs	265.94

Which profit upon 25000 Francs is about 1 $\frac{1}{8}$ per Cent.

2700

EXAMPLE 5.

INDIRECT REMITTANCES AND RETURNS.

£ 1000 laid out in London in Bills on Frankfort, will produce in Paris, as before, in Cash . . . Francs 25394.58

This amount, deducting a further 1 per
Mil. for Brokerage in Paris on buying
returns 25.39

Leaves Net Francs 25369.19

This amount laid out in Paris in the purchase of Bills on Leghorn to be sold in London at the preceding rates, will produce at the arbitrated rate of 25.06 . . £ 1012 6 9

Deduct—Brokerage here on buying and	
selling	2 0 3
Interest, 2 Weeks *	1 11 2
Postages, &c.	15 4
Amount of Charges . .	<u>4 6 9</u>
Net £ 1008 0 0	

£ 8 Profit on £ 1000 is 4-5 ths per Cent.

These examples form specimens of the most usual operations with arbitrated rates, but they admit of several variations where the Mercantile House has correspondents in different foreign places, by whom the negotiations can be conducted.

Commission has not been charged upon these transactions, because they have been considered to be between different branches of the same establishment.—If otherwise, $\frac{1}{4}$, $\frac{1}{3}$, or $\frac{1}{2}$ per Cent, according to agreement, must either be deducted from the proceeds, or applied to the rates according as they are in Sterling or in Foreign money.

* The supposed average lapse of time between paying for the Bills and receiving the money for the returns.

EXERCISES.

Ex. 1. What are the variations corresponding with $1\frac{1}{2}$ per Cent in the following rates ?

Paris	Frs	25	65	Cts.	Vienna	Flor.	10	5	Kr.
Amsterdam	Flor.	12	3	St.	Venice	Lire	30	30	C.
Hamburg	Mks	13	10	Sc.	Leghorn	Pence	48	$\frac{1}{2}$	
Berlin	Doll.	7	2	S. G.	Genoa	Lire	25	60	C.
Petersburg	Pence	10	$\frac{1}{8}$		Madrid	Pence	38		
Frankfort	Batz.	152			Lisbon	Pence	49	$\frac{3}{4}$	

2. What rates per Cent do the following differences occasion ?

Paris	30	Cents	in	Frs	25	55	Cents	
Amsterdam	3	Stivers	—	Flor.	12	3	Stiv.	
Hamburg	4 $\frac{1}{2}$	Schillings	—	Mks	13	10 $\frac{1}{2}$	Sch.	
Berlin	4	Groschen	—	Doll.	6	24	Gros.	
Petersburg	$\frac{1}{2}$	d	—	Pence	10	$\frac{5}{8}$		
Frankfort	5	Batzen	—	Batz.	152			
Vienna	10	Kreuzers	—	Flor.	10	5	Kreuz.	/
Venice	22 $\frac{1}{2}$	Centisimi	—	Lire	30	20	Cent.	
Leghorn	1	d	—	Pence	48	$\frac{1}{2}$		
Genoa	37 $\frac{1}{2}$	Centisimi	—	Lire	25	20	Cent.	
Madrid	$\frac{1}{2}$	d	—	Pence	38			
Lisbon	$\frac{1}{2}$	d	—	Pence	49	$\frac{3}{4}$		

3. London on Paris at 3 months is 25.65 ; Paris on London at 3 months is 25.15—If 28 Cents be allowed for interest, what will be the net rates, and the per Centage difference ?

4. London on Amsterdam at 3 months is 12 2 ; Amsterdam on London is 11.95 ; If the rate of Interest in London is 5 per Cent, and in Amsterdam $2\frac{1}{2}$ per Cent, what will be the net rates, and the per Centage difference ?

5. London on Hamburg at 3 months is 13 10 $\frac{1}{2}$; Hamburg on London at 2 months is 13 8 $\frac{1}{2}$; If the rate of Interest in London is 5 per Cent, and in Hamburg $2\frac{1}{2}$ per Cent, what will be the net rates and the per Centage difference ?

Ex. 6. Find the arbitrated Rates of Exchange between London and Paris, from the following formulæ of Bills on

AMSTERDAM.				LEGHORN.			
		1	£ ?			240	Pence ?
1	—	* 12	1½ Fl. & S.	48½	* —	1	Pezza.
57½*	—		120 Francs.	100	—	* 516	Francs.
<hr/>				<hr/>			
HAMBURG.				GENOA.			
		1	£ ?			1	£ ?
1	—	* 13	12 Mks & S.	1	—	* 25.35	Lire N.
100	—	* 184½	Francs.	100	—	* 100½	Francs.
<hr/>				<hr/>			
FRANKFORT.				NAPLES.			
		1	£ ?			240	Pence ?
1	—	* 150½	Batzen.	40½	* —	1	Ducat.
90	—		4 Rixd.	100	—	* 418	Francs.
100	—	* 98	with Dt.				
103½	—		400 Francs.				
<hr/>				<hr/>			
VIENNA.				MADRID.			
		1	£ ?			240	Pence ?
				37½	* —	1	Dollar.
1	—	* 10	1 Fl. & Kr.	4	—	1	Pistole.
100	—	* 254	Francs.	1	—	* 15.50	Francs.
<hr/>				<hr/>			

The rates for direct bills at 3 months being at London 25.60 and Paris 25.12½

It is required to find

1st—For direct Paper, whether it is better for London to remit to Paris, or for Paris to draw on London,

2ndly—For remittances to Paris, and

3rdly—For returns from Paris,

Whether any indirect Paper affords a better rate than direct Paper, and what is the per Centage difference ?

Ex. 7. Find the arbitrated Rates of Exchange between London and Amsterdam, from the following formulæ of Bills on

PARIS.				LEGHORN.			
		1	£ ?			240	Pence ?
1	—	*	25.60 Francs	48½	*	1	Pezza.
120	—	*	57½ Florins.	40	—	*	97½ Florins.

HAMBURG.				GENOA.			
		1	£ ?			1	£ ?
1	—	*	13 12 Mks & S.	1	—	*25.35	Lire.
40	—	*	35 Florins.	100	—	*	47½ Florins.

FRANKFORT.				NAPLES.			
		1	£ ?			240	Pence ?
1	—	*	150¾ Batzen.	40½	*	1	Ducat.
90	—		4 Rixdoll.	40	—	*	79¾ Florins.
20	—	*	36 Florins				

VIENNA.				MADRID.			
		1	£ ?			240	Pence ?
				37½	*	272	Marav.
1	—	*	10 1 Fl. & Kr.	375	—	1	Ducat.
30	—	*	36½ Florins.	40	—	*	100¾ Florins.

The rates for direct bills at 3 months being, at London 12 1½ and at Amsterdam 11.90.

It is required to find

1st—For direct Paper, whether it is better for London to remit to Amsterdam, or for Amsterdam to draw on London,

2ndly—For remittances to Amsterdam, and

3rdly—For returns from Amsterdam,

Whether any indirect Paper affords a better rate than direct Paper, and what is the per Centage difference ?

Ex. 8. Find the arbitrated Rates of Exchange between London and Hamburg, from the following formulæ of Bills on

PARIS.

	1	£ ?	
1	—	* 25.60	Francs
187	*	— 100	Marks

LEGHORN.

	240	Pence ?	
48½*	—	1	Pezza
1	—	* 44	Schill.
16	—	1	Mark

AMSTERDAM.

	1	£ ?	
1	—	12 1½	Fl. & St.
35.40	—	40	Marks

GENOA.

	1	£ ?	
1	—	* 25.35	Lire
185½*	—	100	Marks

FRANKFORT.

	1	£ ?	
1	—	* 151	Batzen
90	—	4	Rixdoll.
146½*	—	300	Marks

LISBON.

	240	Pence ?	
46½*	—	1000	Reis
1000	—	* 42½	Schill.
16	—	1	Mark

VIENNA.

	1	£ ?	
1	—	10 1	Fl. & Kr.
146½*	—	200	Marks

MADRID.

	240	Pence ?	
37½*	—	272	Marav.
375	—	* 46½	Schill.
16	—	1	Mark.

The rates for direct Bills at 3 months being at London 13 12 and at Hamburg 13 8½

It is required to find

1st, For direct Paper, whether it is better for London to remit, or Hamburg to draw.

2ndly, For remittances to Hamburg, and

3rdly, For returns from Hamburg,

Whether any indirect Paper affords a better rate than direct Paper, and what is the per Centage difference.

Ex. 9. If I remit £ 1000 in Paper to Paris at 25.55 at 3 months, and it is discounted at 5 per Cent for 86 days, what net credit shall I receive ?

10. If I buy a Bill in London on Rotterdam for Florins 5000 at 12 $1\frac{1}{2}$, and sending it to Paris it is negotiated there at 57 $\frac{1}{4}$, what net credit shall I receive ; allowing Brokerage 1-10 th per Cent, and Commission 1-3 rd per Cent; and what rate of Exchange will be established between London and Paris, allowing a Brokerage upon the Purchase here of 1-10 th per Cent?

11. If I buy a Bill for Francs 10.000 in London at 25.50, and send it to Amsterdam and get it negotiated there at 57 $\frac{1}{2}$, what net credit shall I receive, and what rate of Exchange will be established, supposing the rate of the charges to be the same as before ?

12. If I invest £ 1000 in Bills upon Hamburg at 13 $12\frac{1}{4}$, and I send them to Amsterdam to be sold there, what will be the net proceeds, supposing the selling price to be 35 $\frac{3}{8}$, and the whole charges on the sale to be $\frac{1}{2}$ per Cent ? And what profit or loss per Cent shall I make by this operation, if I have Bills in return at 2 months' date at 11.90 ; deducting charges on the purchase at Amsterdam $\frac{1}{2}$ per Cent, and allowing for Brokerage in London 1 per 1000, besides Interest for 67 days at 4 per Cent per Annum ?

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**PRODUCTS.**

|                     |                          |               |                                         |
|---------------------|--------------------------|---------------|-----------------------------------------|
| <b>Ex. 1. Paris</b> | <b>32.06 Cts</b>         | <b>Vienna</b> | <b>7.56<math>\frac{1}{2}</math> Kr.</b> |
| Amsterdam           | 15.18 $\frac{3}{4}$ Cts  | Venice        | 37.87 $\frac{1}{2}$ Cent.               |
| Hamburg             | 2.72 $\frac{1}{2}$ Sc.   | Leghorn       | 2.41 $\frac{1}{2}$ 4 ths                |
| Berlin              | 2.65 Gr.                 | Genoa         | 32.— Cent.                              |
| Petersburg          | 1.01 $\frac{1}{4}$ 8 ths | Madrid        | 1.9 4 ths                               |
| Frankfort           | 1.9 Batz.                | Lisbon        | 2.48 $\frac{3}{4}$ 4 ths                |

## PRODUCTS CONTINUED.

|              |                |         |                |
|--------------|----------------|---------|----------------|
| Ex. 2. Paris | 1.17 per Cent. | Vienna  | 1.65 per Cent. |
| Amsterdam    | 1.23 —         | Venice  | 0.74 —         |
| Hamburg      | 2.05 —         | Leghorn | 2.07 —         |
| Berlin       | 1.96 —         | Genoa   | 1.48 —         |
| Petersburg   | 4.70 —         | Madrid  | 1.31 —         |
| Frankfort    | 3.28 —         | Lisbon  | 1.00 —         |

3. London Net 25.37 Paris Net 25.43 — Diff.  $\frac{1}{4}$  per Ct.

4. London — 11 19 Amsterdam — 12.02 $\frac{1}{2}$  —  $\frac{5}{8}$  —

5. London — 13 7 $\frac{1}{2}$  Hamburg — 13 9 $\frac{1}{8}$  —  $\frac{1}{8}$  —

6. Net direct rates London 25 34.4 — Paris 25 37.6

Indirect rates Amsterdam 25 33.6 Cts.

Hamburg 25 33.4

Frankfort 25 37.5

Vienna 25 44.2

Leghorn 25 53.4

Genoa 25 38.1

Naples 25 00.1

Madrid 24 96.6

For direct Bills, Paris should draw — Difference, 1-8 th per Ct.

— Indirect remittances, Leghorn is 19 Cts. or  $\frac{3}{4}$  per Ct. better.

— Indirect returns, Madrid is 37.8 —  $1\frac{1}{4}$  per Ct. better.

7. Net direct rates London 11 96.6 Amsterdam 12 01.9

Indirect rates Paris 12 21.3

Hamburg 12 03.1

Frankfort 12 06.0

Vienna 12 06.1

Leghorn 12 03.1

Genoa 12 04.1

Naples 11 92.5

Madrid 11 77.0

**Ex. 7. Continued.**—For direct Bills, Amsterdam should draw.

Difference 7-16ths per Cent.

—Indirect remittances, Paris is 24,7 Cts. or 2 per Ct. better.

—Indirect returns, Madrid is 24,9 ——— 2 per Ct. better.

|                     |           |    |      |         |    |      |
|---------------------|-----------|----|------|---------|----|------|
| 8. Net direct rates | London    | 13 | 9.8  | Hamburg | 13 | 10.4 |
| Indirect rates      | Paris     | 13 | 11.0 |         |    |      |
|                     | Amsterdam | 13 | 10.5 |         |    |      |
|                     | Frankfort | 13 | 11.8 |         |    |      |
|                     | Vienna    | 13 | 11.1 |         |    |      |
|                     | Leghorn.  | 13 | 9.7  |         |    |      |
|                     | Genoa     | 13 | 10.9 |         |    |      |
|                     | Lisbon    | 13 | 11.2 |         |    |      |
|                     | Madrid    | 13 | 11.0 |         |    |      |

For direct Bills, Hamburg should draw. Diff. 3-11ths per Ct.

—Indirect remitt. Frankfort is 2 Sch. or  $\frac{1}{2}$  per Ct. better.

—Indirect returns Leghorn is  $\frac{7}{10}$  Sch. or  $\frac{1}{2}$  per Ct. better.

9. Net Credit—Francs 25244 82 Cents. \*

10. Cost in London £ 414 9 10—Net Proceeds in Paris.

Francs 10434.94 — Rate of Exchange. Francs 25.17 $\frac{1}{2}$

11. Cost in London £ 392 11 0 Net Proceeds in Amsterdam.

Florins 4770.91 — Rate of Exch. Flor. 12 15 Cts. or 3 Stiv.

|                        |         |       |    |      |
|------------------------|---------|-------|----|------|
| 12. Amount of the Bill | Bco Mks | 13765 | 10 | Sch. |
| Proceeds in Amsterdam  | Florins | 12173 | 97 | Cts. |
| Net amount of returns  | Florins | 12052 | 54 | Cts. |
| Net amount in Sterling | £       | 1012  | 16 | 4    |
| Interest and Brokerage |         | 10    | 6  | 0    |

Profit—£ 2 10 4 or  $\frac{1}{4}$  per Cent.

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\* N. B. 360 days are generally reckoned 1 Year, in calculations of this nature.



## COMPOUND ARBITRATIONS.

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The rate of exchange between two places, produced by remittances through an intermediate place, in any other than direct Paper of that place, is called a compound arbitrated rate.

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Thus, as has before been stated, if Bills upon Amsterdam are sent from London to Amsterdam, and the proceeds are sent to Paris in direct Bills, the rate thus effected between London and Paris is called a simple arbitrated rate ; but in such remittances through Amsterdam, if Hamburg Bills are sent either from London to Amsterdam, or from Amsterdam to Paris, the rate thus produced between London and Paris, is called a compound arbitrated rate.

Operations of this nature are also called circuitous, when either more than three places are concerned, or, more properly, when the proceeds of the Bills, after having passed through two or more other places, return to the original place ; but the houses capable of thus extending their negotiations, are so few, and the liability to unfavourable changes becomes so much increased, that in the practice of exchanges they are of very limited occurrence.

The calculations of compound rates are, like those of simple arbitrations, usually performed by the Chain Rule ; for remittances, the first of the principal rates is the buying price at the place where the operation commences ; the next, the selling price at the intermediate place if direct Bills are not used ; the next, the buying price of either direct or indirect Bills ; and, lastly, the selling price at the place where the operation terminates if it receives indirect Bills.

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## EXAMPLE 1.

## LONDON AND PARIS.

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Direct Bills from London      Direct from Amsterdam.

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If I buy a bill upon Amsterdam at 12 Flor. 2 St. per £ Sterling and send it to Amsterdam, and the proceeds are forwarded to Paris at  $57\frac{1}{2}$  Florins per 120 Francs, what proportional exchange does this remittance establish between London and Paris?

|                       |     |         |         |                  |
|-----------------------|-----|---------|---------|------------------|
|                       |     | 1       | £       | ?                |
| 1                     | —   | * 12    | 10      | Flor. and Cents. |
| Flor. $57\frac{1}{2}$ | * — |         | 120     | Francs.          |
|                       |     |         | 12.10   |                  |
| $57\frac{1}{2}$       |     |         | 1452.00 |                  |
| 115                   | )   | 2904.00 | ( 25.25 |                  |
|                       |     | 604     |         |                  |
|                       |     | 290     |         |                  |
|                       |     | 600     |         |                  |

Result—Francs 25 25 Cents.

---

Upon referring to page 96, we find this to be the same calculation that is there made for the purchase of Netherland Bills in London, and the sale of them in Paris; this is therefore a simple arbitration, and it is introduced here only because it shows the same routine of the operation with direct Bills, as the three following examples with indirect Bills, which the calculation referred to does not.

Instead of forwarding the proceeds from Amsterdam to Paris, the same result, independent of charges, will come out, by Paris drawing upon Amsterdam on the credit of the fund created there.

## EXAMPLE 2.

## LONDON AND PARIS.

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Indirect from London      Direct from Amsterdam.

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If I buy a bill upon Hamburg at Mks 13 10½ Sc. per £ Sterling, and I send it to Amsterdam, and it is sold there at 35½ Florins per 40 Banco Marks; and if the proceeds are remitted to Paris in French Bills at 57½ Florins per 120 Francs, what price does this transaction establish between London and Paris?

|            |        |   |   |         |             |
|------------|--------|---|---|---------|-------------|
|            |        |   | 1 | £       | ?           |
|            | £ 1    | — | * | 13 10½  | = 218½ Sch. |
| Sch. 640 = | Mks 40 | — | * | 35½     | Florins.    |
|            | 57½ *  | — |   | 120     | Francs.     |
|            |        |   |   | 35½     |             |
|            | 640    |   |   | 4260    |             |
|            | 57½    |   |   | 218½    |             |
|            | <hr/>  |   |   | <hr/>   |             |
|            | 4480   |   |   | 76680   |             |
|            | 3200   |   |   | 8520    |             |
|            | 320    |   |   | 2130    |             |
|            | <hr/>  |   |   | <hr/>   |             |
|            | 368.00 | ) |   | 9308.10 | ( 25.29     |
|            |        |   |   | 1948    |             |
|            |        |   |   | 1081    |             |
|            |        |   |   | 3450    |             |

Result—Francs 25 29 Cents.

---

The first rate, here, is the buying price in London, the second is the selling price at Amsterdam, and the third and last is the buying price of French Bills at the same place, the remittance thence being made to Paris in direct Bills.

N. B. This calculation may be made as in Ex. 4, page 113, without reducing the Marks into Schillings.

## EXAMPLE 3.

## LONDON AND PARIS.

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Direct from London      Indirect from Amsterdam.

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If I buy a Bill upon Amsterdam at 12 2, and it is forwarded to Amsterdam, and the proceeds are laid out in Bills upon Ham-  
burgh at  $35\frac{1}{2}$ , which are forwarded to Paris, and sold there at  
185 Francs per 100 Marks Banco, what rate does this opera-  
tion establish between London and Paris?

|                 |   |          |               |                |
|-----------------|---|----------|---------------|----------------|
|                 |   | 1        | £             | ?              |
| 1               | — | * 12     | 10            | Flor. and Cts. |
| $35\frac{1}{2}$ | * | —        | 40            | Bco Mks        |
| 100             | — | *        | 1.85          | Francs.        |
|                 |   |          | 40            |                |
|                 |   |          | <hr/> 74.00   |                |
|                 |   |          | 12.1          |                |
|                 |   |          | <hr/> 7400    |                |
|                 |   |          | 888           |                |
|                 |   |          | <hr/> 895.400 |                |
| $35\frac{1}{2}$ |   |          | 2             |                |
| 2               |   |          | <hr/> 2       |                |
| <hr/> 71        | ) | 1790.800 | (             | 25.22          |
|                 |   | 370      |               |                |
|                 |   | 158      |               |                |
|                 |   | 160      |               |                |

Result—Francs 25 22 Cents.

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The buying price in London is the first rate, the buying price at Amsterdam the second rate, and the selling price at Paris the third rate.

## EXAMPLE 4.

## LONDON AND PARIS.

Indirect from London      Indirect from Amsterdam

If I buy a Bill upon Hamburg at  $13\ 10\frac{1}{2}$ , and it is sold in Amsterdam at 35; if also the proceeds are there laid out in Bills upon Genoa at  $46\frac{1}{2}$  Florins per 100 Lire, and these Bills are sold in Paris at 1 per Cent Discount, what rate does this operation establish between London and Paris?

|                 |   |       |                 |                 |
|-----------------|---|-------|-----------------|-----------------|
|                 |   | 1     | £               | ?               |
| 1               | — | * 13  | $10\frac{1}{2}$ | Mks and Sch.    |
| 40              | — | * 35  |                 | Florins.        |
| $46\frac{1}{2}$ | * | —     | 100             | Lire.           |
| 100             | — | * 99  |                 | Francs.         |
|                 |   |       | 3500            |                 |
|                 |   |       | 13              |                 |
|                 |   |       | <hr/>           |                 |
|                 |   |       | 45500           |                 |
|                 |   |       | 1750            | for 8           |
| $46\frac{1}{2}$ |   |       | 437.5           | — 2             |
| 40              |   |       | 109.37          | — $\frac{1}{2}$ |
|                 |   |       | <hr/>           |                 |
| 1860            | ) |       | 47796.87        | ( 25.69         |
|                 |   |       | 1059            |                 |
|                 |   |       | 1296            |                 |
|                 |   |       | 808             |                 |
|                 |   |       | <hr/>           |                 |
|                 |   | Fr.   | C.              |                 |
|                 |   | 25    | 69              |                 |
| Discount        |   | 25    | 1 per Ct.       |                 |
|                 |   | <hr/> |                 |                 |
| Result—Francs   |   | 25    | 44              | Cents.          |
|                 |   | <hr/> |                 |                 |

## EXAMPLE 5.

## CIRCUITOUS EXCHANGE.

## LONDON, PARIS, AND LONDON.

Suppose I buy Bills upon Hamburg at  $13\ 10\frac{1}{2}$ , and they are sold in Amsterdam at 35; that the proceeds are invested in Bills upon Genoa at  $46\frac{1}{2}$ , and that these Bills are transmitted to Paris and sold at 1 per Cent Discount; and lastly, that the proceeds are laid out in the purchase of Bills upon Madrid at 15 Frs 20 Cts per Pistole of Plate, and that these Bills are transmitted to me and sold at  $36\frac{3}{4}$  d per Dollar.

What Profit or Loss per Cent would this circuitous exchange produce, independent of the charges?

|                |                   |                     |                         |
|----------------|-------------------|---------------------|-------------------------|
|                |                   | 100                 | £ ?                     |
|                | 1 —               | $13\ 10\frac{1}{2}$ | = $218\frac{1}{2}$ Sch. |
| Sch. 640 = Mks | 40 —              | 35                  | Florins.                |
|                | $46\frac{1}{2}$ — | 100                 | Lire.                   |
|                | 100 —             | 99                  | Franca.                 |
|                | 15.20 —           | 1                   | Pistole = 4 Doll.       |
|                | 1 —               | $36\frac{3}{4}$     | Pence.                  |
|                | 240 —             | 1                   | £ Sterling.             |

$$\frac{218\frac{1}{2} \times 35 \times 99 \times 4 \times 36\frac{3}{4}}{64 \times 46\frac{1}{2} \times 15.20 \times 24} = \underline{\underline{£\ 102.514}}$$

Result £ 102 10 3

Profit £ 2 10 3 per Ct.

To form a proper estimate of the Profit or Loss upon these exchange transactions, the charges must be applied thus :

|                                                       |     |          |
|-------------------------------------------------------|-----|----------|
| To the first rate . . . . .                           | Fr  | 25.25    |
| Double Brokerage — 2 per 1000 . . . . .               | Cts | 5        |
| One Commission — say $\frac{1}{2}$ per Cent . . . . . | 6   | 11       |
|                                                       | Net | Fr 25.14 |

|                                                      |                  |                 |
|------------------------------------------------------|------------------|-----------------|
| To the second rate . . . . .                         | Fr               | 25.29           |
| 3 Brokerages — 3 per 1000 . . . . .                  | Cts              | 7 $\frac{1}{2}$ |
| Double Commission — $\frac{1}{2}$ per Cent . . . . . | 12 $\frac{1}{2}$ | 20              |
|                                                      | Net              | Fr 25.09        |

|                                              |     |          |
|----------------------------------------------|-----|----------|
| To the third rate . . . . .                  | Fr  | 25.22    |
| 3 Brokerages and double Commission . . . . . |     | 20       |
|                                              | Net | Fr 25.02 |

|                                      |     |          |
|--------------------------------------|-----|----------|
| To the fourth rate . . . . .         | Fr  | 25.44    |
| 4 Brokerages — 4 per 1000 . . . . .  | Cts | 10       |
| 4 Commissions — 1 per Cent . . . . . | 25  | 35       |
|                                      | Net | Fr 25.09 |

The last calculation for finding the Profit per Cent, requires correction in the following manner :

|                                                        |   |   |    |      |
|--------------------------------------------------------|---|---|----|------|
| Arbitrated Profit per Cent. . . . .                    | £ | 2 | 10 | 3    |
| 6 Brokerages — 2 at each place . . . . .               | £ | 0 | 12 | 0    |
| 4 Commissions at $\frac{1}{2}$ per Cent each . . . . . | 1 | 0 | 0  |      |
| Interest for 3 weeks, postages, &c. . . . .            | 7 | 3 | 1  | 10 3 |
| Net Profit per Cent                                    | £ | 0 | 11 | 0    |

In each arbitration, there is one brokerage to be deducted on each purchase, and one on each sale.—There is also a Commission, here reckoned at  $\frac{1}{2}$  per Cent, upon each sale and upon each purchase, at Amsterdam and Paris.

If the houses abroad are connected with the London House, the commissions will be saved, or rather divided, and the speculation will be so much the more advantageous: but it is seldom that any great per Centage profit can be made by such transactions, unless by unexpected improvements in the rates of exchange.

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### REMARKS ON THE APPLICATION OF PER CENTAGE CHARGES.

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In the calculation of the charges on exchange operations distinctions are sometimes made, as to whether the per Centages are to be reckoned upon the given amount, or upon that which is produced by the addition or subtraction of the per Centage amounts.

Thus supposing the charges to be 3 per Cent, and the given amount £ 1000, a distinction is made as to whether the proportional statement should be in this form.

If £ 100 produce £  $\left\{ \begin{array}{c} 103 \\ \text{or} \\ 97 \end{array} \right\}$  what will £ 1000 produce ?

To which the product will be £ 1030 or £ 970; or in this form.

If £  $\left\{ \begin{array}{c} 97 \\ \text{or} \\ 103 \end{array} \right\}$  produce £ 100 what will £ 1000 produce ?

To which the product will be nearly £ 1030 18 7, or £ 970 17 6; the former two products making the differences, each £ 30, to be 3 per Cent on the given amount £ 1000, and the latter two products making the differences, £ 30 18 7 and £ 29 2 6, to be 3 per Cent on their amounts £ 1030 18 7 and £ 970 17 6.

But in the finding of an arbitrated Rate of Exchange, it is but very seldom that these distinctions are necessary, because the amounts both of the Rates and Charges are too small to make the difference of any consequence. When otherwise, instead of working the Proportion, a correction may be made upon the first per Centage amount, by adding or subtracting the same per Centage upon that amount.



Thus to apply so much even as 3 per Cent to one of the largest rates with London, as the rate with France at 25.60

|                                        |       |             |
|----------------------------------------|-------|-------------|
| 3 per Cent upon 25.60 is               | . . . | 76.8 Cents. |
| correction—3 per Cent upon 76 Cents is | . . . | 2.2         |
| making by addition                     | . . . | <u>79.0</u> |
| or, by subtraction                     | . . . | <u>74.6</u> |

If therefore 3 per Cent is to be calculated upon the total, as in the 1 st form 97 to 100, we shall obtain the result thus :

|           |       |              |
|-----------|-------|--------------|
| Net rate  | . . . | 25.60        |
| Add       | . . . | .79          |
| Full rate | . . . | <u>26.39</u> |

Which is the same as is produced by working the proportion ; for 97 is to 100, as 25.60 to 26.39 ; or in other terms 3 per Cent on 26.39, which is to be found, is 79 Cents.

On the other hand, 3 per Cent in the 2 nd form 103 to 100, is found by subtraction : thus,

|           |       |                                       |
|-----------|-------|---------------------------------------|
| Full rate | . . . | 25.60                                 |
| Subtract  | . . . | <u>74.<math>\frac{6}{10}</math></u>   |
| Net rate  | . . . | <u>24.85<math>\frac{4}{10}</math></u> |

Which is the same as is produced by working the proportion, for 103 is to 100 as 25.60 to 24.85 $\frac{4}{10}$  ; or 3 per Cent on 24.85 is very nearly 74 $\frac{6}{10}$  Cents.

If the rate of the per Centage is less, the correction becomes of less consequence, and may usually be disregarded.

It must further be observed, that in exchange circulations the charges are, in practice, calculated at each step ; but this precision in finding an arbitrated rate, is wholly unnecessary.

We shall conclude this subject by showing the routine of the last supposition, Example 5.

## ROUTINE OF THE CIRCUITOUS ARBITRATED RATE.

£ 1000 laid out in London in Bills on Hamburg  
at 13 10½ produce . . Banco Mks 13656 4 Sc.

|                                               |         |                   |
|-----------------------------------------------|---------|-------------------|
| These Bills transmitted to Amsterdam and sold |         |                   |
| at 35 Flor. per 40 Marks produce              | - -     | Florins 11949 .22 |
| deduct, Brokerage for selling Hamburg         |         |                   |
| Bills and buying Genoa Bills                  | -       | Flor. 23 .89      |
| Two Commissions each ½ per Cent               | -       | 59 .75            |
| Postages, &c.                                 | - - - - | 3 .58      87 .22 |
| Net proceeds                                  | -       | Florins 11862 . 0 |

This amount laid out in Bills on Genoa  
at 46½ Flor. per 100 Lire produces Lire 25509 67 Cent.

|                                               |         |                    |
|-----------------------------------------------|---------|--------------------|
| These Bills sold in Paris at                  |         |                    |
| 1 per Cent discount produce                   | - - -   | Francs 25254 .58   |
| deduct, Brokerage for selling Bills on Genoa, |         |                    |
| and buying Bills on Madrid                    | - -     | Frs 50 . 50        |
| Two Commissions each ½ per Cent               | -       | 126 . 27           |
| Postages, &c.                                 | - - - - | 7 .23      184 .00 |
| Net proceeds                                  | -       | Francs 25070 .58   |

This amount laid out in Bills on Madrid,  
at Fr. 15.20 per Pistole produces D. P. 6597 4 6

|                                          |         |                  |
|------------------------------------------|---------|------------------|
| These Bills sold in London at 36½ d      |         |                  |
| per Dollar, produce in Sterling          | - - -   | £ 1010 4 11      |
| deduct Brokerage for buying Hamburg      |         |                  |
| Bills and selling Spanish Bills          | -       | £ 2 0 0          |
| Interest, 3 weeks on £ 1000 at 4 per Ct. | 2 6 2   |                  |
| Postages, &c                             | - - - - | 8 9      4 14 11 |
| Net profit                               | -       | £ 5 10 0         |

£ 5 10 s upon £ 1000 are 11-20 ths per Cent.

The estimate in page 115 gives the same result.

## EXERCISES.

What Proportional Exchange is established between,

Ex. 1. London and Paris by Bills upon Amsterdam, bought in London at  $12 \frac{1}{2}$ ; the proceeds having been forwarded from Amsterdam to Paris, in direct Bills at  $56 \frac{1}{2}$  Florins per 120 Francs ?

2. London and Paris by Bills upon Hamburg, bought in London at  $13 \frac{1}{2}$ , and sold in Amsterdam at  $85 \frac{1}{2}$  Florins per 40 Marks, the proceeds having been forwarded to Paris, in direct Bills at  $56 \frac{1}{2}$  Florins per 120 Francs ?

3. London and Paris by Bills upon Amsterdam, bought in London at  $12 \frac{1}{2}$ ; the amount having been forwarded from Amsterdam to Paris in Bills upon Hamburg, which Bills were bought in Amsterdam at  $35 \frac{1}{2}$  Flor. per 40 Banco Marks, and sold in Paris at  $186 \frac{1}{2}$  Francs per 100 Marks ?

4. London and Paris by Bills upon Hamburg, bought in London at  $13 \frac{1}{2}$ , and sold in Amsterdam at  $35 \frac{1}{2}$  Florins per 40 Marks Banco; the proceeds having been invested in Bills upon Genoa at the rate of  $46 \frac{1}{2}$  Flor. per 100 Lire, which Bills were sold in Paris at  $\frac{5}{8}$  per Cent Premium ?

5. London and Hamburg by Bills upon Frankfort, bought in London at  $151 \frac{1}{2}$ , and remitted to Paris and sold at  $1 \frac{1}{2}$  per Cent Discount; the proceeds having been forwarded to Hamburg, in direct Bills at  $186 \frac{1}{2}$  Francs per 100 Marks Banco ?

6. London and Amsterdam by Bills upon Vienna, bought in London at 10 2, and remitted to Paris and sold there at  $253 \frac{1}{2}$  Francs per 100 Florins; the proceeds having been remitted to Amsterdam in Bills upon Frankfort, which were bought in Paris at  $1 \frac{1}{2}$  per Cent Discount, these latter Bills having been sold in Amsterdam at  $36 \frac{1}{2}$  Florins per 20 Rixdollars W. Z. ?

Ex. 7. London and Frankfort by Bills upon Hamburg, which were bought in London at  $13 \frac{11}{2}$ , and having been remitted to Amsterdam were sold there at  $35 \frac{1}{2}$  Florins per 40 Marks Banco; the proceeds having been forwarded to Frankfort in Bills upon Augsburg, which were bought in Amsterdam at 36 Netherland Florins per 30 Florins of Augsburg, and sold in Frankfort at  $100 \frac{1}{2}$  Rixdollars W. Z. per 150 Florins of Augsburg.—The charges being at Amsterdam,  $\frac{1}{2}$  and 2-10 ths per Cent for Commission and Brokerage, and for the same at Frankfort 1-3 rd and 1-10 th per Cent; besides interest from the 28th of September to the 12th of October at 5 per Cent per Annum ?

8. London and Frankfort by Bills upon Paris, which were bought in London at 25.65 and sold in Amsterdam at  $56 \frac{1}{2}$ ; the proceeds having been invested in Bills upon Genoa bought at  $46 \frac{3}{4}$ , and sold in Hamburg at 186; and the proceeds having thence been transmitted to Frankfort in Bills upon Berlin bought at  $152 \frac{1}{2}$ , and sold in Frankfort at  $104 \frac{1}{2}$ —The charges being 3 Commissions at 1-3 rd per Cent each, and 5 Brokerages at 1-10 th per Cent each, besides Interest for 20 days at 4 per Cent per Annum ?

---

#### PRODUCTS.

Ex. 1. Fr.  $25.64 \frac{6}{10}$     Ex. 2. Fr.  $25 \ 88 \frac{8}{10}$     Ex. 3. Fr.  $25.37 \frac{4}{10}$   
 4. Fr.  $26.23 \frac{5}{10}$     5. Mks 13  $12 \frac{8}{10}$  Sc.    6. Fl.  $12.07 \frac{9}{10}$

|                                    |       |        |         |
|------------------------------------|-------|--------|---------|
| 7. Rate without deduction          | . . . | Batzen | 153.127 |
| Allowance for charges at Amsterdam | —     |        | 1.071   |
| Do - Do - at Frankfort             | —     |        | .658    |
| Interest . . . . .                 | —     |        | .204    |
| Net Rate                           | —     |        | 151.104 |

|                                  |       |        |         |
|----------------------------------|-------|--------|---------|
| 8. Rate without deduction        | . . . | Batzen | 154.262 |
| Allowance for Commiss. and Brok. | —     |        | 2.313   |
| Interest . . . . .               | —     |        | .321    |
| Net Rate                         | —     |        | 151.628 |

## BANKING OPERATIONS,

OR

THE COMPARISONS OF RATES OF EXCHANGE

ON

DIFFERENT PLACES.

In the execution of orders for Remittances or Drafts, it is common for limited prices of Bills on different places to be given to the correspondent, to guide him in the choice of the Paper which he should purchase or sell for his principal; and if, as is very common, the limits of the orders and the present prices do not agree, it becomes necessary to compare the given rates with the present rates, in order to determine whether the order should be executed, or amongst several rates, which should be preferred.

The principles upon which these comparisons are founded, are the same as those before explained; viz. that

For Remittances—That rate is the best of which the variable price is the highest in Foreign money, or the lowest in the money of the place making the operation; and that

For Drafts—That rate is the best of which the variable price is lowest in Foreign money, or the highest in the money of the place making the operation.

The comparisons being here however made between rates on different places, and not between arbitrated rates upon the same place, different formulæ are required to be employed, the application of which is facilitated by use of the following letters or symbols.

Fixing the place of operation at London, the money of which is Sterling, we use

*S* to signify a Sterling Rate, as that on Madrid.

*F* . . . . . Foreign Rate, . . . . . Paris.

*g* . . . . . the given price, or limit of the order.

*p* . . . . . the present price, or that at which the order can be executed.

Then for the purpose of affording the means of comparing rates in different monies, and with different fixed prices, it becomes necessary to express them fractionally; that is, to compare them as abstract numbers with unity; in the performance of which we are directed, by the well known arithmetical rule, that, the other term of a fraction remaining fixed, the fraction increases as either the numerator increases, or the denominator decreases; and that the fraction decreases when the reverse takes place.

Applying these symbols to the preceding principles, upon which the comparisons are stated to be founded, viz, that

For Remittances with Foreign rates (F), the greater  $p$  becomes with respect to  $g$ , or, with Sterling rates (S), the less  $p$  becomes with respect to  $g$ , the more the rate improves—and, on the other hand,

For Drafts with Foreign rates (F), the less  $p$  becomes in comparison with  $g$ , or, with Sterling rates (S), the greater  $p$  becomes in comparison with  $g$ , the more the rate improves.

And employing also the fractional forms, we have these formulæ :

#### FOR REMITTANCES

With  $\left\{ \begin{array}{c} F \\ S \end{array} \right\}$  Rates, the rate improves as  $\left\{ \begin{array}{c} \frac{p}{g} \\ \frac{g}{p} \end{array} \right\}$  increases.

#### FOR DRAFTS.

With  $\left\{ \begin{array}{c} F \\ S \end{array} \right\}$  Rates, the rate improves as  $\left\{ \begin{array}{c} \frac{g}{p} \\ \frac{p}{g} \end{array} \right\}$  increases.

For comparing the results of these formulæ, it is generally better to reduce the fractions into decimals, as the greatest result can then be more easily perceived; and in comparing the fractions for Remittances with those for Drafts, to find whether a gain in the one compensates for a loss in the other, it is

generally sufficient to find whether the excess above unity of the one, is equal or superior to the deficiency below unity in the other, though perfect accuracy would require the product of the fractions to be taken, and compared with unity.

We shall now show the application of these formulæ to the most usual operations ; dividing them into two portions ; viz. 1<sup>st</sup>, the comparison of the given and present rates for Remittances and Drafts, both separately and together, with Sterling and Foreign rates ; and, 2<sup>ndly</sup>, the finding of an equivalent present rate, when only one of the present rates is given.

---

N. B. In the practice of these comparisons, it is usual to employ the terms, Cash and Bills, instead of Remittances and Drafts ; thus, as the Rate on Paris increases, it is said to be better for Cash, or the laying out of money, and worse for Bills, or for drawing : while, on the reverse, as this Rate decreases, it is worse for Cash and better for Bills.

On the Continent it is usual to character the Courses of Exchange with the same or similar terms ; as, *Argent, Papier, Geld, Briefe* ; or *Denaro, Lettera, &c.* the Cash rates being those at which Bills were bought of the Bankers, and the Bill rates those at which they were sold by the same parties ; and the same terms are also employed to denote the state of the Bill Market, when the rates are expressed in only one or the other Column ; Cash then signifies that Bills are in demand, and Paper that the supply is greater than the demand.

---

## EXAMPLE 1.

## ORDER FOR REMITTANCES.

I have an order to execute from Frankfort, for Bills either upon Hamburg at 13 10, upon Amsterdam at 12 1, upon Paris at 25.60, or upon Leghorn at 48, or in the Paper that best agrees with these prices.—On the present exchange-day the prices of these Bills are, Hamburg 13 9½—Amsterdam 12 0—Paris 25.50—and Leghorn 48½.—Which Paper is the best for me to remit?

|               |               |                                       |                     |                      |
|---------------|---------------|---------------------------------------|---------------------|----------------------|
| F. Hamburg.   | $\frac{p}{g}$ | $\frac{13\frac{1}{2}}{13\frac{1}{8}}$ | $= \frac{435}{436}$ | $= 0.997\frac{1}{2}$ |
| F. Amsterdam. | $\frac{p}{g}$ | $\frac{12}{12\frac{1}{20}}$           | $= \frac{240}{241}$ | $= 0.995$            |
| F. Paris.     | $\frac{p}{g}$ | $\frac{25.50}{25.60}$                 | $=$                 | $0.996$              |
| S. Leghorn.   | $\frac{g}{p}$ | $\frac{48}{48\frac{1}{2}}$            | $= \frac{96}{97}$   | $= 0.989$            |

The best of these Papers is that upon Hamburg, which is only 2½ per 1000, or ¼ per Ct. less than the limited given price. Paris Paper is the next in value, and the worst is that upon Leghorn.

When the differences in the respective values are not so minute, as to require the trouble of valuing the fractions in order to find out which is the best, they may be calculated thus;

|           |       |     |       |       |         |    |            |
|-----------|-------|-----|-------|-------|---------|----|------------|
| Hamburg   | 13 10 | and | 13 9½ | diff. | ½ Sch.  | or | ¼ per Ct.  |
| Amsterdam | 12 1  | —   | 12 0  | —     | 1 Stiv. | —  | 42-100 ths |
| Paris     | 25.60 | —   | 25.50 | —     | 10 Cts  | —  | 39-100 ths |
| Leghorn   | 48    | —   | 48½   | —     | ½ d     | —  | 1 per Ct.  |



## EXAMPLE 2.

## ORDER FOR DRAFTS.

I have an order from Frankfort to draw upon either of the following places, at the following rates, or the best that the changes in the course may allow; viz. Hamburg at 13 12, Amsterdam at 12 0, Paris at 25.40, or Leghorn at 48½, and the prices of Bills in London, now, are on Hamburg 13 13½, Amsterdam 12 2, Paris 25.50, and Leghorn 48½. Upon which place should I draw in conformity with my instructions?

|               |               |                                           |                     |           |
|---------------|---------------|-------------------------------------------|---------------------|-----------|
| F. Hamburg.   | $\frac{g}{p}$ | $\frac{13\frac{12}{16}}{13\frac{13}{16}}$ | $= \frac{880}{885}$ | $= 0.994$ |
| F. Amsterdam. | $\frac{g}{p}$ | $\frac{12}{12\frac{1}{10}}$               | $= \frac{120}{121}$ | $= 0.991$ |
| F. Paris.     | $\frac{g}{p}$ | $\frac{25.40}{25.50}$                     | $=$                 | $0.996$   |
| S. Leghorn.   | $\frac{p}{g}$ | $\frac{48\frac{1}{2}}{48\frac{3}{4}}$     | $= \frac{194}{195}$ | $= 0.994$ |

Answer, on Paris.

The Foreign rates having risen, and the Sterling rate having fallen, all have become worse for drawing, but that on Paris the least.

N. B. It is evident in this fractional arrangement of the prices, in both this and the last operation, that if either result is greater than unity, that rate has improved beyond the given limit for either purpose, and that if more than one rate has improved, that rate is to be taken which has improved the most.

## EXAMPLE 3.

## ORDER FOR REMITTANCES AND DRAFTS.

I have an order from Hamburg to remit Bills on Amsterdam at 12 2, and to draw upon Paris at 25.45, or at equivalent rates.—The present rates are 12 2½ on Amsterdam, and 25.50 on Paris, should I execute the order?

$$\begin{array}{llll} \text{F. Hamburg} & \text{Remit} & \frac{p}{g} & \frac{12\frac{5}{40}}{12\frac{1}{10}} = \frac{485}{484} = 1.002 \end{array}$$

$$\begin{array}{llll} \text{F. Paris} & \text{Draw} & \frac{g}{p} & \frac{25.45}{25.50} = \frac{509}{510} = 0.998 \end{array}$$

It here appears that the betterness of the fraction for the Remittance, is equal to the worseness of that for the Draft, and therefore the order may be executed.

If more exactness is requisite, the decimals may be extended, as to 1.00206 and 0.99804\* and they then show, that the alterations taken together make the transaction more favourable than the limits of the order.

But the same may be perceived by the fractions alone, for the difference of the first from unity is 1-484 th, and that of the second 1-510 th, and therefore as the former is greater than the latter, the Remittance and Draft may be executed with advantage.

---

\* It has been remarked, that precision may require the fractions or their values to be multiplied together, thus

$$1.00206 \times 0.99804 = 1.000095 \text{ \&c.}$$

but in this example the product is very nearly the same as the sum of the two fractions.

## EXAMPLE 4.

## ORDER FOR REMITTANCES AND DRAFTS.

I am ordered by my correspondent at Paris to remit him Paper on Hamburg at 13 11½, and to reimburse myself by drawing on Leghorn at 48½.—The rates here being on Hamburg 13 11, and on Leghorn 48½, should I execute the order?

$$\text{Mks } 13 \ 11\frac{1}{2} = 219\frac{1}{2} \text{ Sch.} \quad \text{Mks } 13 \ 11 = 219 \text{ Sch.}$$

$$\begin{array}{llll} \text{F. Hamburg} & \text{Remit} & \frac{p}{g} & \frac{219}{219\frac{1}{2}} = 0.997\frac{1}{2} \end{array}$$

$$\begin{array}{llll} \text{S. Leghorn} & \text{Draw} & \frac{p}{g} & \frac{48\frac{1}{2}}{48\frac{1}{2}} = 1.005 \end{array}$$

The rate for Drafts appears to have improved more than the rate for Remittances has deteriorated, and it will therefore be proper to execute the order.

The same may be found from per-centaging the differences in the rates; thus, the Hamburg difference, ½ Sch. Banco, is 2.9 ths per Cent Worse; and the Leghorn difference, ½ d Sterling, is ½ per Cent Better, and consequently the improvement is greater than the deterioration.

It is evident, in any case, that if the improvement is less than the deterioration, the order should not be executed.

## TO FIND EQUIVALENT RATES.

When there are limitations in the prices of compound orders, or those for drawing or remitting, it is frequently necessary, from comparing one of the present rates with its correspondent given rate, to find the other equivalent rate, which may be done by the following directions :

Arrange the fractional form of the two sets of prices according, as before, to whether the rate at London is in Foreign money or Sterling, leaving that term blank \* which is required ; then,

If a numerator is wanting, multiply the denominators together, and divide the product by the single numerator ; or

If a denominator is wanting, multiply the numerators together, and divide the product by the single denominator.

## EXAMPLE 1.

I have orders to remit upon Paris at 25.60, and to draw upon Amsterdam at 12 2. The rate upon Paris has fallen to 25.50, at what equivalent price must be the rate upon Amsterdam, to prevent any loss ?

The Rates for both these places are Foreign.

|              |       |                                    |                       |
|--------------|-------|------------------------------------|-----------------------|
| F. Paris     | Remit | $\frac{p}{g}$                      | $\frac{25.50}{25.60}$ |
| F. Amsterdam | Draw  | $\frac{g}{p}$                      | $\frac{12.10}{x}$     |
|              |       | $\frac{12.10 \times 25.50}{25.60}$ | $= 12.05$ Answer.     |

Hence, as the course by falling has become unfavourable for remitting, the course upon Amsterdam must be improved, also by falling to a proportionate rate ; viz. Flor. 12 1 St.

\* In the following formulæ, the blank term is denoted by the letter  $x$ , and it may be here observed, that when this letter occurs in statements of Equations, Proportions, &c. it must be understood as the Algebraical expression for the required quantity.

## EXAMPLE 2.

I have orders to remit upon Paris at 25.60, and to draw upon Amsterdam at 12 2.—If the Amsterdam rate improves for drawing to 12 1, to what depreciation in the Paris rate shall I be limited?

Rates as Ex. 1.

|    |           |       |               |                       |
|----|-----------|-------|---------------|-----------------------|
| F. | Paris     | Remit | $\frac{p}{g}$ | $\frac{x}{25.60}$     |
|    |           |       | $\frac{g}{p}$ |                       |
| F. | Amsterdam | Draw  | $\frac{g}{p}$ | $\frac{12.10}{12.05}$ |
|    |           |       | $\frac{p}{g}$ |                       |

$$25.60 \times 12.05 \div 12.1 = 25.49 \text{ Answer.}$$

The remittance may therefore be executed as low as 25.50, without making the given limits worse.

## EXAMPLE 3.

I have to remit upon Madrid at 38, and to draw upon Leghorn at 48.—The Madrid rate having risen to  $38\frac{1}{4}$ , to what rate shall I be limited for Leghorn?

The rates for both these places are Sterling.

|    |         |       |               |                            |
|----|---------|-------|---------------|----------------------------|
| S. | Madrid  | Remit | $\frac{g}{p}$ | $\frac{38}{38\frac{1}{4}}$ |
|    |         |       | $\frac{p}{g}$ |                            |
| S. | Leghorn | Draw  | $\frac{p}{g}$ | $\frac{x}{48}$             |
|    |         |       | $\frac{g}{p}$ |                            |

$$38\frac{1}{4} \times 48 \div 38 = 48\frac{5}{16} \text{ Answer.}$$

Hence, from the Madrid rate having got worse for remitting, I must not execute the order unless the Leghorn rate rises above  $48\frac{5}{16}$  d, as otherwise I shall not obtain enough for the Bills on Leghorn, to answer the proportionate advance of the Bills on Madrid.

## EXAMPLE 4.

I have to remit on Madrid at 38, and draw upon Leghorn at 48—If the Leghorn rate improves for drawing to  $48\frac{1}{4}$ , to what extent may I go with Madrid?

Both rates are Sterling.

|    |         |       |               |                            |
|----|---------|-------|---------------|----------------------------|
| S. | Madrid  | Remit | $\frac{g}{p}$ | $\frac{38}{x}$             |
| S. | Leghorn | Draw  | $\frac{p}{g}$ | $\frac{48\frac{1}{4}}{48}$ |

$$38 \times 48\frac{1}{4} \div 48 = 38\frac{1}{16} \text{ Answer.}$$

The Leghorn rate having improved, I shall get more for my Drafts, and can therefore afford to give more for the Bills upon Madrid should this rate also have risen.

## EXAMPLE 5.

I have to remit upon Leghorn at 48, and draw upon Paris at 25.60—If the Paris rate improves to 25.50, to what rate shall I be limited upon Leghorn?

London upon Leghorn — Sterling rate.  
London upon Paris — Foreign rate.

|    |         |       |               |                       |
|----|---------|-------|---------------|-----------------------|
| S. | Leghorn | Remit | $\frac{g}{p}$ | $\frac{48}{x}$        |
| F. | Paris   | Draw  | $\frac{g}{p}$ | $\frac{25.60}{25.50}$ |

$$25.60 \times 48 \div 25.50 = 48\frac{3}{16} \text{ Answer.}$$

## EXAMPLE 6.

I have to remit upon Leghorn at 48, and to draw upon Paris at 25.60—If the Leghorn rises to  $48\frac{1}{2}$ , at what rate may I draw upon Paris ?

|    |         |       |               |                            |
|----|---------|-------|---------------|----------------------------|
| S. | Leghorn | Remit | $\frac{g}{p}$ | $\frac{48}{48\frac{1}{2}}$ |
| F. | Paris   | Draw  | $\frac{g}{p}$ | $\frac{25.60}{x}$          |

$$25.60 \times 48 \div 48\frac{1}{2} = 25.46 \text{ Answer.}$$

## EXAMPLE 7.

If I have to remit upon Paris at 25.60, and to draw upon Leghorn at 48, and Paris Bills are now 25.50, at what rate at least must I be able to draw upon Leghorn to execute this order ?

|    |         |       |               |                       |
|----|---------|-------|---------------|-----------------------|
| F. | Paris   | Remit | $\frac{p}{g}$ | $\frac{25.50}{25.60}$ |
| S. | Leghorn | Draw  | $\frac{p}{g}$ | $\frac{x}{48}$        |

$$25.60 \times 48 \div 25.50 = 48\frac{3}{16} \text{ Answer.}$$

## EXAMPLE 8.

If I have to remit upon Paris at 25.60, and to draw upon Leghorn at 48, and the Leghorn rate is now  $48\frac{1}{2}$ , to what extent may I limit the Paris rate ?

|    |         |       |               |                            |
|----|---------|-------|---------------|----------------------------|
| F. | Paris   | Remit | $\frac{p}{g}$ | $\frac{x}{25.60}$          |
| S. | Leghorn | Draw  | $\frac{p}{g}$ | $\frac{48\frac{1}{2}}{48}$ |

$$25.60 \times 48 \div 48\frac{1}{2} = 25.46 \text{ Answer.}$$

## EXERCISES.

Ex. 1. I have an order from Leghorn to remit Bills upon either Paris at 25.60, Amsterdam at 12 2, Hamburg at 13 10, or Genoa at 25.75, but the present rates being, Paris 25.50, Amsterdam 12 0½, Hamburg 13 8½, and Genoa 25.65, which Paper should I select ?

2. I have an order from Paris to remit Bills upon either Amsterdam at 12 1½, Hamburg at 13 10½, Frankfort at 152, Madrid at 38½, or Leghorn at 48½—The present rates are on Amsterdam 12 1, Hamburg 13 9½, Frankfort 150½, Madrid 38¾, and Leghorn 48¾, which Paper should I select ?

3. I have orders from Hamburg to draw upon either of the following places, or the best that the variations from the following rates may allow ; viz. upon Paris at 25.40, Amsterdam at 12 1, Cadiz at 38, or Lisbon at 49½—Which place should I select, the present rates being as follows ; on Paris 25.50, Amsterdam 12 2½, Cadiz 37½, and Lisbon 48½ ?

4. I have an order to remit Bills upon Amsterdam at 12 1, and to draw upon Hamburg at 13 10, or at equivalent rates ; but the present rates being on Amsterdam 12 2½, and Hamburg 13 12, should I execute this order ?

5. I have an order to remit Bills upon Leghorn at 48½, and to draw upon Lisbon at 48½, or at equivalent rates.—Should I execute this order at the present rates of Leghorn 48¾, and Lisbon 49 ?

6. The rates to which I am limited being, in a compound order, to remit on Leghorn at 48½, and to draw upon Paris at 25.45, or at not less advantageous rates—Am I authorized to act, the present rates being on Leghorn 48¾, and Paris 25.37½ ?



Ex. 7. My orders being to remit upon Paris at 25.50, and to draw upon Amsterdam at 12 2, and the price on Paris being 25.40, at what equivalent price should be the rate upon Amsterdam, to enable me to act without loss to my correspondent ?

8. I have orders to remit upon Paris at 25.55, and to draw upon Hamburg at 13 10; the Hamburg rate has improved for drawing to 13 9½, to what depreciation in the Paris rate am I limited ?

9. I have to remit upon Lisbon at 50, and to draw upon Leghorn at 48½—If the Lisbon rate rises to 50½, to what rate shall I be limited for Leghorn ?

10. I have to remit upon Lisbon at 50, and to draw upon Madrid at 37—If the Madrid rate improves for drawing to 37½, to what depreciation may be the rate at which I may take Paper upon Lisbon ?

11. I have to remit upon Lisbon at 50, and to draw upon Paris at 25.50—If the Paris rate improves to 25.37½, to what limit shall I be restrained upon Lisbon ?

12. I have to remit upon Lisbon at 50, and to draw upon Genoa at 25.60—If the Lisbon rate rises to 50½, at what equivalent rate may I draw upon Genoa ?

13. If I have to remit upon Paris at 25.65, and to draw upon Lisbon at 50, at what rate may I draw upon Lisbon, if the Paris rate falls to 25.55 ?

---

ANSWERS.

|                       |                         |            |                          |
|-----------------------|-------------------------|------------|--------------------------|
| Ex. 1. Genoa          | —                       | Difference | 3.9 per 1000             |
| 2. Amsterdam          | —                       |            | 2.1 — 1000               |
| 3. Paris              | —                       |            | 4.0 — 1000               |
| 4. Rates unfavourable | Ex. 5. Rates equivalent |            |                          |
| 6. Rates unfavourable | 7. Amster. Flor.        | 12         | 1.04                     |
| 8. Paris Frs          | 25                      | 49.1       | 9. Leghorn Pence 48.98,5 |
| 10. Lisbon Pence      | 50.6½                   |            | 11. Lisbon Pence 50.24   |
| 12. Genoa Lire        | 25.34,6                 |            | 13. Lisbon Pence 50.19   |

## BULLION OPERATIONS.

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Bullion Operations are the import and export of Gold and Silver, either coined or uncoined, to create funds for the purposes of exchange operations.

The chief object of the calculations connected with Foreign Bullion Operations, is to find either from the prices in the two countries concerned, what rate or Par of exchange they yield, or from the price and rate of exchange at one of the places, what arbitrated price is equivalent at the other place.

In the valuation of Gold and Silver in this country, the price of either is determined from the quantity that it contains of metal of a certain purity, called Standard, which standard quantity necessarily depends upon the purity of the given metal, as determined by a process called its Assay.*

In the following consideration of these operations, we shall, first, under the head of the Valuation of Bullion, show the manner in which the fine and standard weights of Bullion are calculated, and the mode in which it is valued, both in this country and in France, the Netherlands, and Germany; and, then, under the head of Arbitrations of Bullion, the most usual comparisons that are made between these values, both for arbitrated Pars and Prices.

* English Assays are thus conducted; having taken a small portion of the metal to be assayed, and accurately weighed it against a small weight which is called the assay pound weight of 24 nominal carats for Gold, and 12 nominal ounces for Silver, the alloy or base metal is separated, either by heat in the assay furnace, or by chemical solvents, and the fine metal which is obtained is weighed against its respective standard weight, proportioned to the full pound-weight. This standard weight for Gold is called 22 carats, being 11-12 ths of the nominal full pound-weight, and, for Silver, 11 oz. 2 dwts. or 37-40 ths of the nominal full 12 ounce-weight, and if the fine metal weighs more than the standard weight it is called so much better, and if less, so much worse than standard; thus having taken 24 carats of a Gold compound, and refined it, if when we have weighed it against the 22 carat-weight, we find that the fine metal is heavier by 1 carat 3 grains, we say the Gold compound is 1 carat 3 grs better than standard.

Foreign Assays usually report the whole of the fine weight.

VALUATION OF BULLION.

 THE STANDARDING OF GOLD AND SILVER.

The standarding of Gold and Silver is the calculation of the quantity of standard Gold or Silver that is contained in, or that could be obtained from, the full weight of the given metal, according to the assay report of its fineness.

The British standard purity of Gold is 22 Carats of fine Gold out of 24 Carats full weight of metal. The Gold Carat is a nominal weight divided into 4 Grains, each of which is subdivided into Quarter or Half-Quarter-Grains.

If the 24 Carats are reckoned one Pound in weight, then 1 Carat equals 10 Dwts Troy, 1 Carat Grain equals 2 Dwts 12 Grains Troy, and 1 Quarter-Carat Grain equals 15 Grains Troy.

The British standard purity of Silver is 11 Oz. 2 Dwts of fine Silver out of 12 Oz. full weight of metal. The Ounce is 20 Pennyweights, and in assays of Silver, the Pennyweight is divided into Half Pennyweights.

The reports of the purity of the metal tried or assayed, are, by English assayers, made in comparison with these standards, and the comparative difference is called its Betterness or Worse-ness.

Thus, Gold 23 Carats 3 Grains fine, is called Better 1 Carat 3 Grains; and Gold 20 Carats 1 Grain fine, Worse 1 Carat 3 Grains.

Also, pure Silver, or Silver 12 Oz. fine, is said to be Better 18 Dwts; and Silver which is only 10 Oz. fine, is reported Worse 1 Oz. 2 Dwts.

N. B. The British Standards are the mintage Purities of the Gold and Silver Coins of the Realm.

TO FIND THE STANDARD WEIGHT OF GOLD.

Multiply the full weight by the number of Carats, take parts for the Grains, and divide the amount by 22, for the Betterness or Worseness.

(or)

Take parts out of the full weight, for the report out of 22 Carats, and the amount will be the Betterness or Worseness.

Then add the Betterness, or subtract the Worseness, to or from the full weight, and the sum or remainder will be the standard weight.*

Gold in large quantities is not weighed with greater nicety than to 12 Grains, but the standard weight is calculated to 1 Grain.

EXAMPLE.

To find the standard weight of 48 lb 11 oz. 7 dwts 12 grs of Gold, reported Worse 1 car. $3\frac{1}{2}$ grs.

	lb	oz	dw	gr		
$\frac{1}{2}$.	.	48	11	7	12 . for 1 carat.
$\frac{1}{2}$.	.	24	5	13	18 . . . 2 grains.
$\frac{1}{2}$.	.	12	2	16	21 . . . 1 —
$\frac{1}{2}$.	.	6	1	8	10 . . . $\frac{1}{2}$ —
			3	0	14	5 . . . $\frac{1}{4}$ —

2) 94 10 0 18

11) 47 5 0 9

4 3 14 14 Worseness.

lb 44 7 12 22 Standard.

Oz. 535 12 22

*. The standard weight is also called the pay-weight.

**TO REDUCE THE FULL WEIGHT OF GOLD TO THE
FINE WEIGHT.**

Find the standard weight, and subtract from it the 1-12 th part ;

(or)

To 22 Carats add the report if Better, or from 22 Carats subtract the report if Worse, to find the Carats fine ; then multiply the full weight by the number of these Carats, and take parts for the Grains, and divide the amount by 24.

N. B. Sometimes it may be shorter to take parts for the Carats fine out of 24 Carats ; or to take parts for their deficiency out of 24 Carats, to find the allowance for alloy.

EXAMPLE 1.

To find the fine weight of 48 lb 11 oz. 7 dwts. 12 grs. of Gold, reported Worse 1 car. $3\frac{3}{4}$ grs.

The standard weight by the preceding example, is

	oz	dw	gr	
$\frac{1}{12}$ - -	535	12	22	Standard.
	44	12	18	Alloy.
<hr/>				
Oz.	491	0	4	Fine.

(or)

22 carats, less 1 car. $3\frac{3}{4}$ grs. = 20 car. $0\frac{1}{2}$ gr. fine.

	oz	dw	gr	
$\frac{1}{3}$ - - $\frac{1}{2}$ - -	587	7	12	Full Weight.
<hr/>				
	293	13	18	for 12 car.
$\frac{1}{128}$ - -	195	15	20	— 8 —
	1	10	14	— $\frac{1}{4}$ gr.
<hr/>				
Oz.	491	0	4	Fine Weight.

EXAMPLE 2.

To find the fine weight of 4 dwts. $5\frac{3}{4}$ grs of Gold, reported Better 1 car. $3\frac{1}{2}$ grs.

22 Carats and 1 car. $3\frac{1}{2}$ grs = 23 car. $3\frac{1}{2}$ grs.

		dw	gr	
$\frac{1}{192}$	- -	4	5.75	for 24 Carats, fine.
			0.53	- - $\frac{1}{2}$ Grain, alloy.
		<hr/>		
Dwts		4	5.22	grs fine weight.
		<hr/>		

23 Carats $3\frac{1}{2}$ Grains fine, make only $\frac{1}{2}$ Grain of alloy in 24 Carats full weight; hence as 1 Grain is the 96 th part of 24 Carats, for the $\frac{1}{2}$ Grain we take the 192 nd part.

When the fine as well as the standard weight is required, it is frequently better, first to find the fine weight, and then to find the standard weight by adding 1-11 th part to it, as

		dw	gr	
$\frac{1}{11}$	- -	4	5.22	Fine.
			9.20	Alloy.
		<hr/>		
Dwts.	-	4	14.42	Standard.
		<hr/>		

The reason of this evidently is, because 11 Oz. of fine Gold will make 12 Oz. of standard Gold;* and therefore the alloy to be added to fine Gold, or taken from standard Gold, to change the one into the other, is 1-11 th of the fine weight or 1-12 th of the standard weight.

* That 1 Carat Better or Worse should require 1-22 nd part of the whole weight (and that any other quantity should require a proportional product) to be added or subtracted to reduce it to standard, is also evident from the nature of the report; for 1 Carat Worse means that in 22 Ounces of the given Metal, there is 1 Ounce too much of alloy; and therefore the weight of standard Gold which it contains, is only 21 Ounces: this may be proved thus—Worse 1 Carat, is 21 Carats fine; which means that 21-24 ths of the Metal is fine Gold.—Out of 22 Ounces therefore of this quantity of Gold, 21-24 ths or $19\frac{1}{4}$ Oz. are fine Gold; but 1-11 th of the weight of fine Gold is the alloy required to reduce it to standard Gold, and 1-11 th of $19\frac{1}{4}$ Oz. is $1\frac{3}{4}$ Oz. the weight of the alloy, which added to the $19\frac{1}{4}$ Oz. makes 21 Oz. of standard Gold, and gives the same result as before.

TO FIND THE VALUE OF GOLD.

Gold is valued either from the full weight, by a price varying according to the variation in purity, being about 3 s 6 d per Carat, and $10\frac{1}{2}$ d per Grain if Better, or 4 s per Carat and 1 s per Grain if Worse, the latter allowance being the greater to defray the expense of refining;—or by the Market Price per Oz. Standard, from the quantity of standard Gold;—or by the fixed Mint Price of Gold, which is £ 3 17 10½ per Oz. Standard; the latter being the rate usually set upon Coins for determining their intrinsic value as Money.

EXAMPLE 1.

To find the value of 14 lb 3 oz. 11 dwts 12 grs of Doubleton Gold at 76 s per oz.

14 lb 3 oz. 11 dwts 12 grs = 171 oz. 11 dwts 12 grs.

	£	s	d	
$\frac{1}{2}$ - -	171	11	6	amount at 20 s
			4	
	686	6	0	- - 80 s
	34	6	4	- - 4 s
	£ 651	19	8	- - 76 s

N. B. At 20 s per oz. every dwt is worth 1 s and every grain $\frac{1}{2}$ d; therefore we take as many pounds and shillings as there are oz. and dwts, and half as many pence as there are grains.

EXAMPLE 2.

To find the amount of 11 lb 8 oz. 7 dwts 12 grs of Gold, reported Worse 0 Car. 2 grs, at 77 s 6 d per Oz. Standard.

	lb	oz	dw	gr	
$\frac{1}{2}$ - -	11	8	7	12	
2)	5	10	3	18	for 2 grs.
11)	2	11	1	21	
		3	3	19	Worseness.
lb	11	5	3	17	Standard.
oz	137	3	17		at £ 3 17 6 per Oz.

	£	s	d	
$\frac{1}{8}$ - -	137	3	8 $\frac{1}{2}$	
			4	
	548	14	10	for 80 s
	17	3	0	— 2 s 6 d
£	531	11	10	

It is of no consequence whether the pounds are reduced into ounces before or after the standard weight is found ; but at the Bank it is usual to cast out the Betterness or Worseness as above : with private dealers, it is rather more common to reduce the full weight into ounces.

N. B. In the practice of business the Worseness of Gold is calculated to the nearest grain.

EXAMPLE 3.

To find the standard and fine weights and the value at 77 s 10½ d per Oz. Standard, of a Prussian Double Frederick d'or weighing dwts 8 14 grs and reported Worse 2 grs.

	dw	gr	
	8	14	
½ - -	206		Grains.
2)	103		for 2 Grains Worse.
11)	51.5		
	4.681		Worseness.
1½ - -	201.319		Grains, Standard.
	16.776		Alloy.
Grains	184.543		Fine.

Grains 201.319 = 8 dwts 9.319 grs.

	s	d	
10 - -	8	4.659	* Value at 20 s
		4	
	33	6.636	— — 80 s
10 - -		10.065	— — 2 s
		.629	— — 1½ d
s	32	7.942	— — 77 s 10½ d

Products — Standard Weight 8 dwts 9.31 grs.

Fine Weight 184.54 Grains—Value 32 s 7.94 d..

N. B. For greater exactness, even when the results are given in hundredths, the remainders may be extended, as above, to the third place of decimals.

* This 4.659 d is found by dividing 9.319, the number of the Grains, by 2.

EXERCISES.

Ex. 1. Find the weight of standard Gold contained in 11 lb 10 Oz. 16 Dwts of Gold, reported Worse 2 Car. 2 Grs.

2. Find the weight of standard Gold contained in 16 lb 4 Oz. 11 Dwts 12 Grs of Gold, reported Better 0 Car. $1\frac{1}{2}$ Gr.

3. Find the weight of standard Gold contained in 8 Dwts $4\frac{3}{4}$ Grs. of Gold, reported Better 0 Car. $1\frac{1}{2}$ Gr.

4. Find the weight of standard Gold contained in 2 Dwts $5\frac{1}{2}$ Grs. of Gold, reported Better 1 Car. $3\frac{1}{2}$ Grs.

5. What is the weight of fine Gold contained in 9 lb 11 Oz. 14 Dwts 12 Grs of Gold, reported Worse 0 Car. $3\frac{1}{2}$ Grs ?

6. What is the weight of fine Gold contained in a Coin, weighing 5 Dwts $8\frac{1}{2}$ Grs. reported Worse 0 Car. $\frac{1}{4}$ Gr ?

7. What is the value of 4 lb 7 Oz. 4 Dwts 12 Grs of Gold, at 74 s per Oz. ?

8. What is the value of 21 lb 10 Oz. 18 Dwts 12 Grs. of Gold, reported Worse 1 Car. $3\frac{1}{2}$ Grs. at 77 s 6 d per Oz. Standard ?

9. What are the standard and fine weights of the following Coins, and what are their values at 77 s $10\frac{1}{2}$ d per Oz. Standard ?

Country.	Names.	dwts	gr	C	gr
French . .	Napoleon . .	Weight 4	$3\frac{1}{2}$	Report 0	$1\frac{1}{2}$ Worse.
— . .	Doub. Lou. 48 L.—	9	20	—	0 $1\frac{1}{2}$ W
Dutch . .	Ducat . .	—	2 $5\frac{3}{4}$	—	1 $2\frac{1}{2}$ Better.
— . .	10 Florins . .	—	4 $7\frac{3}{4}$	—	0 $1\frac{1}{2}$ W
Hanoverian	George d'or . .	—	4 $6\frac{1}{2}$	—	0 $1\frac{1}{2}$ W
Danish . .	Christian d'or	—	4 7	—	0 1 W
Austrian . .	Half-Sovereign	—	3 14	—	0 $0\frac{1}{4}$ W .
— . .	Ducat . .	—	2 $5\frac{7}{8}$	—	1 $2\frac{3}{4}$ B
Russian . .	Imperial . .	—	4 $3\frac{1}{2}$	—	Standard.
Bavarian . .	Max d'or . .	—	4 4	—	3 $2\frac{1}{4}$ W
Portuguese	Dobraon . .	—	34 12	—	Standard.
— . .	Joannese . .	—	9 $6\frac{1}{2}$	—	0 $0\frac{1}{4}$ W
Spanish . .	Doubloon	—	17 $8\frac{1}{2}$	—	1 $0\frac{1}{2}$ W

Country.	Names.	dwt	gr	C	gr	
American .	Eagle .	Weight 11	6	Report 0	0 $\frac{1}{2}$	Worse.
Calcutta .	Mohur . .	— 8	12 $\frac{3}{4}$	— 0	0 $\frac{1}{4}$	W
Madras . .	Mohur . .	— 7	12	— 0	0 $\frac{1}{4}$	W
Bombay . .	Mohur . .	— 7	11	— 0	0 $\frac{1}{4}$	Better.

PRODUCTS.

Ex. 1.	Worseness,	lb 1 4	4 13	Standard Oz.	126 11 11
2.	Betterness,	lb 0 3	18 4	— Oz.	200 9 16
3.	Betterness,	Grs 3.35	—	Dwts 8	8.10grs.
4.	Betterness,	Grs 4.73	—	Dwts 2	10.48grs.
5.	Fine Wt.	Oz. 105 7 16	Ex. 6.	F. Wt. dw. 4	21.45grs.
7.	Value	£ 204 6 8	8.	Value	£ 934 18 0
9.		dwt	gr	grs	s d
Napoleon	St. Wt. 4	1.52	Fine	89.39	Value 15 9.86
Double Louis	— 9	15.97	—	212.64	— 37 7.63
Ducat	— 2	9.56	—	52.77	— 9 4.07
10 Florins	— 4	5.68	—	93.21	— 16 5.97
George d'or	— 4	5.04	—	92.62	— 16 4.72
Christian d'or	— 4	5.83	—	93.34	— 16 6.25
Half-Sover.	— 3	13.75	—	78.61	— 13 10.95
Ducat	— 2	10.00	—	53.17	— 9 4.93
Half-Imperial	— 4	3.50	—	91.20	— 16 1.71
Max d'or	— 3	11.80	—	76.82	— 13 7.16
Dobraon	— 34	12.00	—	759.00	— 134 4.01
Joannese	— 9	5.86	—	203.37	— 35 11.95
Doubloon	— 16	11.20	—	362.26	— 64 1.40
Eagle	— 11	4.46	—	246.09	— 43 6.67
C. Mohur	— 8	12.16	—	187.15	— 33 1.49
M. Mohur	— 7	11.48	—	164.53	— 29 1.44
B. Mohur	— 7	11.50	—	164.54	— 29 1.48

TO FIND THE STANDARD WEIGHT OF SILVER.

Multiply the full weight by the number of Pennyweights in the report, and divide the product by 222 for the Betterness or Worseness.

Or divide the full weight by 37 for the Betterness or Worseness at 6 Dwts, and proportion this result to the given report.

Then add the Betterness or subtract the Worseness to or from the full weight.

N. B. The full weight of Silver in large quantities, is not taken lower than to quarters of an Ounce.—The standard weight is calculated to 1 Dwt.

EXAMPLE.

To reduce 17 lb 10 oz. 15 dwts of Silver, reported Worse $8\frac{1}{2}$ Dwts, to standard weight.

		lb	oz	dw	
$\frac{1}{2}$	- -	17	10	15	
				8	
				<hr/>	
		143	2	0	
		8	11	7	
				<hr/>	
		152	1	7	
				<hr/>	
222	)	1825	(	8 oz. 4 dwts.	
		49			
		<hr/>			
	)	987	(	4 dwts.	
		99			
				<hr/>	
		17	10	15	Full Weight.
			8	4	Worseness.
				<hr/>	
		17	2	11	Standard.
				<hr/>	
		Oz.	206	11 dwts.	
				<hr/>	

TO REDUCE THE FULL WEIGHT OF SILVER TO THE FINE WEIGHT.

Multiply the full weight by the number of Pennyweights fine, taken from the report, and divide the product by 240.

Or, take parts for the Pennyweights of alloy out of 240 Dwts, and subtract the amount.

Or, having found the standard weight, multiply it by 37, and divide the product by 40.

EXAMPLE.

To find the quantity of fine Silver, in 39 oz. 10 dwts of Silver, reported Worse 6 Dwts.

222 dwts fine, less 6 dwts Worse = 216 dwts fine.

Hence the Alloy = 24 dwts.

	oz dw	
$\frac{1}{10}$ - -	39 10	Full Weight.
	3 19	Alloy for 24 dwts.
	<hr/>	
	Oz. 35 11	Fine Weight.

The Alloy being here 24 dwts, or the 10 th part of 240 dwts, one tenth of the full weight is taken off, and the remainder is the fine weight.

(or,)

	oz dw	
$\frac{1}{37}$ - -	39 10	at 6 dwts Worse.
	1 1	Worseness.
	<hr/>	
$\frac{1}{20}$ - -	38 9	Standard Weight.
	<hr/>	
$\frac{1}{2}$ - -	1 18 $\frac{1}{2}$	for 2-40 ths.
	19 $\frac{1}{2}$	1-40 th.
	<hr/>	
	Oz. 35 11	Fine Weight.

TO FIND THE VALUE OF SILVER.

The Mint price of standard Silver at 66 d per Oz. is so much above the value that standard Silver has for many years borne, that it rarely is valued otherwise than as Bullion.

Dollars are usually sold by the full weight, at a variable price per Ounce.

Other Silver is sold by the standard weight, at a variable price per Ounce Standard.

But Coins are usually valued from the standard weight, at the fixed price of 5 s per Ounce Standard.

EXAMPLE 1.

What is the value of 128 lb 11 oz. 15 dwts of Dollar Silver, at $57\frac{7}{8}$ d per Ounce ?

$$128 \text{ lb } 11 \text{ oz. } 15 \text{ dwts} = 1547 \text{ oz. } 15 \text{ dwts.}$$

	£	s	d	
$\frac{1}{2}$ - -	1547	15	0	Amount at 20 s
$\frac{1}{8}$ - -	309	11	0	— 48 d
$\frac{1}{2}$ - -	38	13	$10\frac{1}{2}$	— 6 -
$\frac{1}{4}$ - -	19	6	$11\frac{1}{4}$	— 3 -
$\frac{1}{8}$ - -	4	16	9	— $\frac{6}{8}$ -
		16	$1\frac{1}{2}$	— $\frac{1}{8}$ -
	£	373	4 8	Sterling.

In the above manner also the valuation is made when the price is per Ounce Standard, after the full weight has been reduced to the standard weight, in the manner of the example page 144.

The valuation at 20 s per Oz. has been explained, page 139.

At 5 s per Oz. 1 Dwt is worth 3 d, and 1 Grain is worth $\frac{1}{8}$ th of a Penny, and therefore $\frac{1}{8}$ th of the number of standard Grains is the value in Pence.

EXAMPLE 2.

To find the standard and fine weights, and the value at 5 s per Oz. Standard, of a Mexican Dollar weighing 17 dwts 8 grs. reported Worse 8 Dwts.

17 dwts 8 grs = 416 Grains.

	gr	
$\frac{1}{3}$ - -	416	for 6 dwts.
	138.666	— 2 dwts.
<hr/>		
37)	554.666	(14.990
	36	remainder.

	gr	
	416	Full Weight.
	14.990	Worseness.
<hr/>		
$\frac{1}{20}$ - -	401.010	Standard.
<hr/>		
$\frac{1}{2}$ - -	20.050	
	10.025	
<hr/>		
Grains	370.935	Fine.

	d	
8)	401.01	
<hr/>		
Pence	50 $\frac{1}{8}$	Value.

Products — Standard Weight, grs 401.01 = 16 dwts. 17.01 grs.

Fine Weight — 370.93 Grains — Value 50 $\frac{1}{8}$ d.

N. B. In the valuation of Coins, the remainders may be extended as directed in page 141.

The amount at 5 s per Oz. Standard is, as before stated, 1-8 th of a Penny for each Grain in the Standard Weight.

EXERCISES.

Ex. 1. Find the standard weight in Oz. of a bar of Silver weighing lb 61 4 15, reported Better $6\frac{1}{2}$ Dwts.

2. Find the standard weight in Oz. of a bar of Silver weighing lb. 27 10 10, reported Worse 1 Oz. 17 Dwts.

3. Find the fine weight of Oz. 87 5 Dwts of Silver, Worse, $7\frac{1}{2}$ Dwts.

4. Find the average, full, standard, and fine weights of a Spanish Dollar, from the estimate of 1000 Dollars weighing Oz. 866, the assay report being Worse 8 Dwts; and also find the value at $59\frac{3}{4}$ d per Oz. Standard.

5. Find the standard and fine weights, and the value at 5 s per Oz. Standard of each of the following Coins.

Country.	Names.	dwt	gr	oz	dw	
French . .	5 Francs	Weight 16	$1\frac{3}{4}$	Report 0	7	Worse.
Dutch . .	Guilder or Flo.	— 6	22	— 0	8	W
Hanoverian	F. Zweydrittel	— 8	9	— 0	16	Better.
Hamburg .	Current Mark	— 5	$21\frac{1}{2}$	— 2	2	W
Danish . .	Rigsbank Doll.	— 9	7	— 0	12	W
Prussian .	Current Dollar	— 14	7	— 2	3	W
Russian . .	Silver Ruble	— 13	8	— 0	14	W
Austrian .	Speciesthaler	— 18	1	— 1	2	W
L. Veneto	6 Lire	— 16	$17\frac{1}{2}$	— 0	7	W
Neapolitan	Ducat del Reg.	— 14	18	— 1	2	W
Sicilian . .	Crown 12 Tari	— 17	14	— 1	4	W
Roman . .	Scudo	— 17	1	— 0	3	W
Portuguese	Crusado Novo	— 9	3	— 0	4	W
Spanish . .	Pillar Dollar	— 17	8	— 0	8	W
Mexican .	Dollar	— 17	$7\frac{3}{4}$	— 0	$7\frac{1}{2}$	W
Peruvian .	Dollar	— 17	7	— 0	$6\frac{1}{2}$	W
American .	Dollar	— 17	8	— 0	$8\frac{1}{2}$	W
Bengal . .	Sicca Rupee	— 8	0	—		Standard.
Madras .	Rupee	— 7	12	— 0	2	W
Bombay .	Rupee	— 7	11	— 0	$0\frac{1}{4}$	W

PRODUCTS.

Ex. 1. Betterness 1 lb 9 oz. 11 dwts; Stand. oz. 758 6 dwts.

2. Worseness, 4 lb 7 oz. 15 dwts — oz. 278 15 dwts.

3. Fine Weight 78 oz. 0 dwts

4. Average Weight dwts 17 7.68 grs.

Standard Weight dwts 16 16.69 grs.

Fine Wt 370.64 grs —Value 49.87 Pence.

5.	dw	gr	grs		s	d
5 Francs	St. Wt. 15	13.58	Fine 345.56	Value	3	10.69
Florin	— 6	16.01	— 148.01	—	1	8.00
Zweydrittel	— 8	23.48	— 199.32	—	2	2.93
Current Mark	— 4	18.73	— 106.12	—	1	2.34
Rigsb. Dollar	— 8	18.94	— 195.12	—	2	2.36
Prussian Doll.	— 11	12.56	— 255.82	—	2	10.57
Silver Ruble	— 12	11.82	— 277.33	—	3	1.47
Speciesthaler	— 16	6.09	— 360.83	—	4	0.76
6 Lire	— 16	4.84	— 359.67	—	4	0.60
Ducat del Reg.	— 13	6.91	— 295.00	—	3	3.86
Sicilian Crown	— 15	16.37	— 348.15	—	3	11.04
Roman Scudo	— 16	19.47	— 373.21	—	4	2.43
Crusado Novo	— 8	23.05	— 198.92	—	2	2.88
Pillar Dollar	— 16	17.01	— 370.93	—	4	2.12
Mexican Doll.	— 16	17.70	— 371.57	—	4	2.21
Peruvian Doll.	— 16	18.85	— 372.63	—	4	2.35
Amer. Dollar	— 16	16.07	— 370.06	—	4	2.00
Sicca Rupee	— 8	0.00	— 177.60	—	2	0.00
Madras Rupee	— 7	10.37	— 165.00	—	1	10.29
Bomb. Rupee	— 7	10.79	— 165.39	—	1	10.34

TO FIND THE VALUE OF GOLD AND SILVER PARTINGS.

Gold and Silver Partings are mixtures of these Metals with or without any Alloy ; the mixture being called a Gold Parting when the Gold is in greater quantity, and a Silver Parting when there is more Silver than Gold.

The report of a Gold Parting is made thus ;

Worse	—	2 Car 3 Grains.
Fine Silver	—	1 Oz. 17 Dwts.

Which means, that the mass, with regard to the quantity of the alloy, is 2 Carats 3 Grs worse than standard Gold ; and that out of the alloy, the weight of 1 oz. 17 dwts per Pound Troy of Metal, is fine Silver.

The report of a Silver Parting is made thus ;

Worse	—	0 Oz. 8 Dwts.
Fine Gold	—	10 Troy Grains

Meaning that the Metal, as a mixture of Silver, is 8 Dwts worse than standard Silver ; and that a Pound Troy of the Metal contains 10 Troy Grains of fine Gold.

The valuation of a Gold Parting is more commonly made by a rate agreed upon between the Purchaser and Seller, than by a separate valuation of each of the precious Metals ; but with a Silver Parting it is rather the reverse.

N. B. Sometimes the actual quantities of both Metals are reported, thus ;

Fine Gold	7 Oz.	}	in the Pound.
Fine Silver	3 Oz.		

Which, as a Gold Parting, is equivalent to, Worse 8 Carats ; fine Silver 3 Oz. in the Pound.

EXAMPLE 1.

To find the value per Oz. of a Gold Parting Ingot, reported

Worse — 2 Carats 3 Grains.

Fine Silver — 1 Oz. 17 Dwts per lb.

reckoning standard Gold to be worth 77 s 6 d per Oz. and standard Silver 5 s per Oz. and the expense of refining to be 8 d per Oz.

			s	d	
	$\frac{1}{11}$	- -	77	6	Price per Oz. Standard.
			<hr/>		
	$\frac{1}{4}$	- -	7	0 $\frac{1}{2}$	for 2 Carats.
	$\frac{1}{2}$	- -	1	9	— 2 Grs.
				10 $\frac{1}{2}$	— 1 Gr.
			<hr/>		
			9	8	Allowance for Worseness.
			<hr/>		
			67	10	Value of the Gold per Oz.
Silver			s	d	
			5	0	Stand.
3-37 ths			5		Alloy.
			<hr/>		
1 oz. . . .	5	5			Fine.
10 dwts . .	2	8 $\frac{1}{2}$			
5 — . .	1	4 $\frac{1}{2}$			
2 — . .		6 $\frac{1}{2}$			
			<hr/>		
	s 10	0 $\frac{1}{2}$	- -	10	Add for fine Silver.
			<hr/>		
			68	8	Value per Oz.
				8	Allowance for refining.
			<hr/>		
	Net Value	s 68	0		per Oz.

The allowance for the Worseness upon the value per Oz. Standard having been made, we have to make an addition for the fine Silver, at 5 s 5 d per Oz. for 1 Oz. 17 Dwts—but as the latter quantity is contained in 1 lb of Metal, we take 1-12 th of the amount, as the additional value per Ounce for the fine Silver.

EXAMPLE 2.

To find the rate per Oz. of Silver Parting, reported

Worse — 8 Dwts.

Fine Gold — 15 Troy Grs per lb.

reckoning standard Silver to be worth 5 s per Oz. and fine Gold 84 s 6 d per Oz.; and allowing $1\frac{3}{4}$ d per Oz. for the expense of refining.

		s	d	
		5	0	
		<hr/>		
1-37 th	- -	1.62		for 6 Dwts.
		.54	- 2 -	
		<hr/>		
		2.16		Allowance for Worseness.
		<hr/>		
		s	d	
1 Oz.	84	6		
	<hr/>			
1 Dw.	4	2.7		
	<hr/>			
12 Grs	2	1.35		
3 Grs	.	6.33		
	<hr/>			
2	7.68 per lb	2.64		Add for fine Gold.
		<hr/>		
		s 5	0.48	Value per Oz.
		1.75		Allowance for refining.
		<hr/>		
		s 4	10.73 d	or 4 s 10 $\frac{3}{4}$ d per Oz.

The accuracy of this mode of calculation depends upon the manner in which the Assayer makes his report.—If the report of the purity of the Silver is made after the Gold has been extracted, this estimation is correct; but if the Gold is considered as alloy to the Silver, and the report of the latter is made before the quantity of Gold is found, then the Silver report requires, as a correction, to be lessened in purity by the amount of the Gold: as 15 Grains of Gold upon the report, Worse 8 Dwts, will make the report Worse 9 Dwts, unless the report is made in quarter-pennyweights, and then the allowance will make the report Worse $8\frac{1}{2}$ Dwts.

EXAMPLE OF THE VALUATION OF SILVER PARTING.

Bars.	Weight.		Report.	
	lb oz dw			gr.
No. 1	— 31 10 15	Worse 6½ Dwts	Fine Gold	17 per lb.
2	— 38 3 0	Worse 8 Dwts	do.	11 —
3	— 36 9 10	Worse 8 Dwts	do.	35 —
4	— 30 8 10	Better 5 Dwts	do.	22 —
Silver 59½ d per Oz. Stand. — Gold 77 s 9 d per Oz. Stand.				
Allowance for refining, 1 s 9 d per lb.				

	lb oz dw		lb oz dw		gr.
No. 1	— 31 10 15	Worseness	0 11 4	Fine Gold	542
2	— 38 3 0	—	1 4 10	—	421
3	— 36 9 10	—	1 3 18	—	1287
	106 11 5		3 7 12		
4	— 30 8 10	Betterness	8 6	—	675
	137 7 15		2 11 6	Grains	2925
	2 11 6	Net Worseness		Oz.	6 1 21
lb	134 8 9	Standard			
Oz.	1616 9 dwts	-	at 59½ d	-	£ 402 8 7

	oz dw gr				
Fine Gold	6 1 21				
Betterness	10 17	at 1 Car.	3¼ Gr.		
			£ s d		
Stand.	6 12 14	at 77 s 9 d	- -	25 15 5	
Extracting	137 lb 7 oz.	at 1 s 9 d	- -	12 0 9	- 13 14 8
				£ 416 3 3	

N. B. Fine Gold is here reckoned only 1 Car. 3¼ Grs. Better, it being difficult to extract Gold, in any large quantity, free from some alloy.

Sometimes instead of allowing the charge for extracting, 8 or 9 Grains are deducted from the report, and the surplus is valued either from the Standard Weight, or at 2 pence per fine Grain.

FRENCH REPORTS.

The French mode of reporting Gold and Silver, is, according to the decimal system, to report the whole of the fine metal, in Millièmes or 1000 th parts of the metal under trial.

Hence as the English lowest division for Gold is into Quarter-Grains, or the 24 Carats into 384 Quarter-Grains, and for Silver into Half-Dwts, or the 12 Oz. into 480 Half-Dwts, the French reports are finer, or to a greater degree of accuracy, than the English

by 1000 to 384, or about $2\frac{1}{2}$ to 1, for Gold;* and
by 1000 to 480, or about 2 to 1, for Silver.

The reduction of these decimal reports to the British Standards, is made in the manner of the following Examples.

EXAMPLE 1.

To reduce the French report of 987 Millièmes fine to an English report in Carats.

$$\begin{array}{r}
 .987 \\
 24 \\
 \hline
 \text{Car. } 23.688 \\
 4 \\
 \hline
 \text{Gr. } 2.752
 \end{array}$$

$$\begin{array}{rcl}
 \text{Report 987 Fine} & = & \text{Carats } 23 \ 2\frac{3}{4} \text{ Gr.} \\
 \text{British Standard} & - & 22 \ 0 \\
 \hline
 \text{Better} & - & \text{Carats } 1 \ 2\frac{3}{4} \text{ Gr.}
 \end{array}$$

* If the Gold is reported to half-quarter-grains, as is sometimes done, and as it has lately been proposed at the Mint to be generally done, the 24 Carats are then divided into 768 eighths of grains, and the relation between the French and English reports becomes as 1000 to 768.

REVERSE.

To reduce 1 Carat $2\frac{3}{4}$ Grs Better into Millièmes.

1 Car. $2\frac{3}{4}$ Grs Better, are 23 Car. $2\frac{3}{4}$ Grs fine.

$$\begin{array}{r}
 4 \quad) \quad 2.75 \\
 \hline
 24 \quad 4 \quad) \quad 23.6875 \\
 \hline
 6 \quad) \quad 5.9218 \\
 \hline
 \text{Millièmes} \quad 987 \quad \text{Raide}^* \\
 \hline
 \end{array}$$

EXAMPLE 2.

To reduce British Standard for Gold, or 22 Carats fine, into Millièmes.

$$\begin{array}{r}
 2 \quad) \quad 22. \\
 \hline
 12 \quad) \quad 11.000 \\
 \hline
 \text{Millièmes} \quad 917 \\
 \hline
 \end{array}$$

It must be remarked, that there is a little diversity in the practice of French calculators, with respect to reckoning the lowest figure of the Millièmes when there is a remainder that is above half the divisor; thus some reckon British Standard Gold, which is $916\frac{2}{3}$ fine, as 917 fine; others as 916 fine; and others extend the decimal thus, 916.66, &c.

It may be noticed, that the French assayers are generally considered to make their reports of Gold about 2 Millièmes or $\frac{1}{4}$ Grain worse than the reports of English assayers; thus the British Gold Coin is estimated at only 915 fine, and is received into the French mints only at this rate.

* When the French reports are made for the guidance of Merchants, it is customary, if the fineness is barely equal to the report, to style it *Raide*, and when it is the full Millième, or a little above, to character it as *Franc* or *Bien Franc*.

EXAMPLE 3.

To reduce the French report of 938 of Silver, to the equivalent English report, in Ounces and Dwts.

	.938				
	12				
Oz.	<u>11.256</u>	Report	oz. dw.		
	20	Standard	11 5	Fine.	
			11 2		
Dwts	<u>5.120</u>	Better	— 3	Dwts.	

The number of Dwts fine that answer to the Silver report in Millièmes, may be found by dividing them by 4, and subtracting from the quotient 1 Dwt out of every 25, or 4 out of 100—Thus 938 divided by 4 gives $234\frac{1}{2}$, from which taking $9\frac{1}{2}$ (8 for 200 and $1\frac{1}{2}$ for 34) there remains, as above, 225 Dwts fine.

EXAMPLE 4.

To reduce the English report of Silver, Worse 7 Dwts, into Millièmes.

Worse 7 dwts, is Fine 10 oz. 15 dwts = 10.75 oz.

	12) 10.750	
Millièmes	<u>896</u>	<i>Raide</i>

EXAMPLE 5.

To reduce the English report for Silver of Standard fineness, into Millièmes.

Standard is 11 oz. 2 dwts fine.

	12) 11.100	
Millièmes	<u>925</u>	

In French Parting Reports, 1 Millième of Gold is about $5\frac{1}{2}$ Grains in the English Pound Troy; but the Gold should be reported 6 Grains at least, to make the full Millième.

THE FRENCH MINTAGE VALUATION OF GOLD AND SILVER.

The standard purity of the French Coins both Gold and Silver is 900 fine.—The fixed full price for Gold of this purity, is Francs 3100 per Kilogramme, and for Silver, Francs 200 per Kilogramme; but as the French Mints charge 9 Francs per Kilogramme of Gold of the purity of 900 fine, or 10 Francs per Kilogramme of fine Gold, and $1\frac{1}{2}$ per Cent on Silver, for Seignorage, *Retinue*, or Mint expenses, the fixed prices become

Francs	3091.00	for Gold	-	900	fine, or
—	3434.44 $\frac{1}{2}$	ditto	-	1000	fine, that is, fine Gold.
—	197.00	for Silver	-	900	fine, or
—	288.88 $\frac{3}{4}$	ditto	-	1000	fine, that is, fine Silver.

From these the prices for any other purities are obtained, by multiplying them by the Millièmes of purity, and dividing the results by 900 if the prices for this purity be used.

The fixed prices thus obtained are called Tarif Rates, and any variation in the market-price is formed by an agio, which has hitherto always been a premium.*

EXAMPLES OF FORMING THE TARIF RATES.

For Gold 916 fine.

$$\begin{aligned} \text{Francs } 3434.44\frac{1}{2} & \times 916 = \text{Francs } 3145.95 \\ \text{or, Francs } 3091 & \times 916 \div 900 = \text{Francs } 3145.95 \end{aligned}$$

For Silver 925 fine.

$$\begin{aligned} \text{Francs } 218.89 & \times 925 = \text{Francs } 202.47 \\ \text{or, Francs } 197 & \times 925 \div 900 = \text{Francs } 202.47 \end{aligned}$$

In forming the Tarif Rates it is to be observed, that the second of each of the above methods is generally used; and that in dividing by 9, if 5 or above remains, it makes the rate another Centime; thus 218.88 $\frac{3}{4}$ is reckoned 218.89 Francs.

* Gold and Silver Partings are termed Or argenté and Argent doré.—The two metals in the former are usually separately valued; but with the latter 1 Millième is generally deducted from the report of the fine Gold, and the value of the Gold is estimated for the remainder.—With respect to the value of the Millième deducted, part covers the expense of refining, and the other part raises the rate of the premium.

EXAMPLES OF THE VALUATION OF GOLD AND SILVER.

EXAMPLE 1.

To find the amount of Kilogrammes 3.071 of Gold, 978 fine, at a premium of $8\frac{1}{2}$ per Mille upon the Tarif Rate of 3358.89 Francs per Kilogramme.

	Francs		
	3358.89		
	3,071		
	<hr/>		
	335889		
	2351223		
	1007667		
	<hr/>		
	Francs	10315.15	Amount without Premium.
10.315	$\times 8 =$	82.52	Premium at 8 per Mille.
—	$\times \frac{1}{2} =$	5.16	— — $\frac{1}{2}$ —
	<hr/>		
	Francs	10402.83	Whole amount.
	<hr/>		

Instead of thus valuing the Gold from the Tarif Rate and the quantity, which is the proper method, it is by some directed that the price of the Kilogramme fine, should be multiplied by the number of Kilogrammes, and that product by the purity, but when the quantity is large the two results will frequently not agree by several Centimes.

EXAMPLE 2.

To find the amount of Kilogrammes 18.084 of Silver, 896 fine at the premium of 4 per Mille upon the Tarif Rate of 196.12 Francs per Kilogramme.

Frs	196.12	\times	18.084	=	Frs	3546 63	Cents.
	3.5466	\times	4	=		14 19	Premium.
						<hr/>	
					Francs	3560 82	Amount.
						<hr/>	

EXERCISES.

Ex. 1. Compare the following decimal reports with British Standard.

Gold 892	Gold 917	Silver 788	Silver 925
— 898	— 925	— 892	— 930
— 900	— 995	— 900	— 986

2. Reduce the following English reports to Millièmes fine.

Gold Car. 1	2½ Gr. Worse	Silver Oz. 1	2 Dwts Worse.
— — 0	0¼ — Worse	— — 0	8 — Worse.
— — 1	2½ — Better	— — 0	14 — Better.

3. Find the Tarif Rates and values of the following quantities of Gold at 7 per Mille premium.

Kilogrammes 14.846	Report 996	fine.
— 11.338	— 944	fine.
— 16.725	— 915	fine.

4. Find the Tarif Rates and the values of the following quantities of Silver at 5½ per Mille premium.

Kilogrammes 22.894	Report 988	fine.
— 23.679	— 963	fine.
— 17.498	— 907	fine.

PRODUCTS.

Ex. 1. Worse 0 C. 2½ Gr.	W. 0 C. 1½ Gr.	W. 0 C. 1½ Gr.
Standard	B. 0 C. 0½ Gr.	B. 1 C. 3½ Gr.
Worse 1 Oz. 13 Dw.	W. 0 Oz. 8 Dw.	W. 0 Oz. 6 Dw.
Standard	B. 0 Oz. 1 Dw.	B. 0 Oz. 14½ Dw.

2.	848.9	914.0	984.3
	833.3	891.6	983.3
3. Rate, Francs	3420.71	Value, Francs	50783.86
	3242.12		36759.16
	3142.52		52558.65
	Amount with Premium,	Francs	141082.38
4. Rate, Francs	216.26	Value, Francs	4951.06
	210.79		4991.30
	198.53		3473.88
	Amount with Premium,	Francs	13493.38

TARIF RATES AND BRITISH REPORTS FOR MILLIEMES
OF GOLD.

Mill.	Fr.	C.	C.	gr.	Mill.	Fr.	C.	C.	gr.
1000	3434	44	B 2	0	953	3273	03	B 0	3 $\frac{1}{8}$
999	3431	01	1	3 $\frac{7}{8}$	952	3269	59	0	3 $\frac{3}{8}$
998	3427	58	1	3 $\frac{3}{4}$	951	3266	16	0	3 $\frac{1}{4}$
997	3424	14	1	3 $\frac{1}{2}$	950	3262	72	0	3 $\frac{1}{8}$
996	3420	71	1	3 $\frac{1}{4}$	949	3259	29	0	3
995	3417	27	1	3 $\frac{1}{8}$	948	3255	85	0	3
994	3413	84	1	3 $\frac{3}{8}$	947	3252	42	0	2 $\frac{7}{8}$
993	3410	40	1	3 $\frac{1}{2}$	946	3248	98	0	2 $\frac{3}{4}$
992	3406	97	1	3 $\frac{1}{8}$	945	3245	55	0	2 $\frac{5}{8}$
991	3403	53	1	3 $\frac{1}{8}$	944	3242	12	0	2 $\frac{3}{8}$
990	3400	10	1	3	943	3238	68	0	2 $\frac{1}{2}$
989	3396	67	1	2 $\frac{7}{8}$	942	3235	25	0	2 $\frac{3}{8}$
988	3393	23	1	2 $\frac{3}{4}$	941	3231	81	0	2 $\frac{1}{4}$
987	3389	80	1	2 $\frac{3}{8}$	940	3228	38	0	2 $\frac{3}{8}$
986	3386	36	1	2 $\frac{5}{8}$	939	3224	94	0	2 $\frac{1}{8}$
985	3382	93	1	2 $\frac{1}{4}$	938	3221	51	0	2
984	3379	49	1	2 $\frac{3}{8}$	937	3218	07	0	1 $\frac{7}{8}$
983	3376	06	1	2 $\frac{1}{4}$	936	3214	64	0	1 $\frac{3}{4}$
982	3372	62	1	2 $\frac{1}{4}$	935	3211	21	0	1 $\frac{3}{8}$
981	3369	19	1	2 $\frac{1}{8}$	934	3207	77	0	1 $\frac{5}{8}$
980	3365	76	1	2	933	3204	34	0	1 $\frac{1}{2}$
979	3362	32	1	1 $\frac{7}{8}$	932	3200	90	0	1 $\frac{3}{8}$
978	3358	89	1	1 $\frac{7}{8}$	931	3197	47	0	1 $\frac{3}{8}$
977	3355	45	1	1 $\frac{3}{4}$	930	3194	03	0	1 $\frac{1}{4}$
976	3352	02	1	1 $\frac{5}{8}$	929	3190	60	0	1 $\frac{1}{8}$
975	3348	58	1	1 $\frac{1}{2}$	928	3187	16	0	1
974	3345	15	1	1 $\frac{1}{2}$	927	3183	73	0	0 $\frac{7}{8}$
973	3341	71	1	1 $\frac{3}{8}$	926	3180	30	0	0 $\frac{7}{8}$
972	3338	28	1	1 $\frac{1}{4}$	925	3176	86	0	0 $\frac{3}{4}$
971	3334	85	1	1 $\frac{1}{8}$	924	3173	43	0	0 $\frac{5}{8}$
970	3331	41	1	1	923	3169	99	0	0 $\frac{1}{2}$
969	3327	98	1	1	922	3166	56	0	0 $\frac{1}{2}$
968	3324	54	1	0 $\frac{7}{8}$	921	3163	12	0	0 $\frac{3}{8}$
967	3321	11	1	0 $\frac{3}{4}$	920	3159	69	0	0 $\frac{1}{4}$
966	3317	67	1	0 $\frac{5}{8}$	919	3156	25	0	0 $\frac{1}{8}$
965	3314	24	1	0 $\frac{3}{8}$	918	3152	82	0	0 $\frac{3}{8}$
964	3310	80	1	0 $\frac{1}{2}$	917	3149	39	St 0	0
963	3307	37	1	0 $\frac{3}{8}$	916	3145	95	W 0	0 $\frac{1}{8}$
962	3303	94	1	0 $\frac{1}{4}$	915	3142	52	0	0 $\frac{1}{4}$
961	3300	50	1	0 $\frac{1}{4}$	914	3139	08	0	0 $\frac{3}{8}$
960	3297	07	1	0 $\frac{1}{8}$	913	3135	65	0	0 $\frac{3}{8}$
959	3293	63	1	0	912	3132	21	0	0 $\frac{1}{2}$
958	3290	20	0	3 $\frac{7}{8}$	911	3128	78	0	0 $\frac{5}{8}$
957	3286	76	0	3 $\frac{3}{4}$	910	3125	34	0	0 $\frac{3}{4}$
956	3283	33	0	3 $\frac{3}{8}$	909	3121	91	0	0 $\frac{3}{4}$
955	3279	89	0	3 $\frac{3}{8}$	908	3118	48	0	0 $\frac{3}{8}$
954	3276	46	0	3 $\frac{1}{2}$	907	3115	04	0	1

TARIF RATES AND BRITISH REPORTS FOR MILLIEMES
OF GOLD.

Mill.	Fr.	C.	C.	gr.	Mill.	Fr.	C.	C.	gr.
906	3111	61	W 0	1 $\frac{1}{8}$	859	2950	19	W 1	1 $\frac{5}{8}$
905	3108	17	0	1 $\frac{1}{8}$	858	2946	75	1	1 $\frac{3}{8}$
904	3104	74	0	1 $\frac{1}{8}$	857	2943	32	1	1 $\frac{3}{8}$
903	3101	30	0	1 $\frac{1}{8}$	856	2939	88	1	1 $\frac{7}{8}$
902	3097	87	0	1 $\frac{1}{8}$	855	2936	45	1	2
901	3094	43	0	1 $\frac{1}{8}$	854	2933	02	1	2 $\frac{1}{8}$
900	3091	00	0	1 $\frac{1}{8}$	853	2929	58	1	2 $\frac{1}{8}$
899	3087	57	0	1 $\frac{3}{8}$	852	2926	15	1	2 $\frac{1}{8}$
898	3084	13	0	1 $\frac{3}{8}$	851	2922	71	1	2 $\frac{3}{8}$
897	3080	70	0	2	850	2919	28	1	2 $\frac{1}{8}$
896	3077	26	0	2	849	2915	84	1	2 $\frac{1}{8}$
895	3073	83	0	2 $\frac{1}{8}$	848	2912	41	1	2 $\frac{3}{8}$
894	3070	39	0	2 $\frac{1}{8}$	847	2908	97	1	2 $\frac{3}{8}$
893	3066	96	0	2 $\frac{1}{8}$	846	2905	54	1	2 $\frac{7}{8}$
892	3063	52	0	2 $\frac{3}{8}$	845	2902	11	1	3
891	3060	09	0	2 $\frac{3}{8}$	844	2898	67	1	3
890	3056	06	0	2 $\frac{5}{8}$	843	2895	24	1	3 $\frac{1}{8}$
889	3053	22	0	2 $\frac{5}{8}$	842	2891	80	1	3 $\frac{1}{8}$
888	3049	79	0	2 $\frac{5}{8}$	841	2888	37	1	3 $\frac{3}{8}$
887	3046	35	0	2 $\frac{7}{8}$	840	2884	93	1	3 $\frac{3}{8}$
886	3042	92	0	3	839	2881	50	1	3 $\frac{1}{8}$
885	3039	48	0	3 $\frac{1}{8}$	838	2878	06	1	3 $\frac{5}{8}$
884	3036	05	0	3 $\frac{1}{8}$	837	2874	63	1	3 $\frac{5}{8}$
883	3032	61	0	3 $\frac{1}{8}$	836	2871	20	1	3 $\frac{5}{8}$
882	3029	18	0	3 $\frac{3}{8}$	835	2867	76	1	3 $\frac{7}{8}$
881	3025	75	0	3 $\frac{3}{8}$	834	2864	33	2	0
880	3022	31	0	3 $\frac{5}{8}$	833	2860	29	2	0 $\frac{1}{8}$
879	3018	18	0	3 $\frac{5}{8}$	832	2857	46	2	0 $\frac{1}{8}$
878	3015	44	0	3 $\frac{5}{8}$	831	2854	62	2	0 $\frac{1}{8}$
877	3012	01	0	3 $\frac{7}{8}$	830	2850	59	2	0 $\frac{3}{8}$
876	3008	57	1	0	829	2847	15	2	0 $\frac{1}{8}$
875	3005	14	1	0	828	2843	72	2	0 $\frac{5}{8}$
874	3001	70	1	0 $\frac{1}{8}$	827	2840	29	2	0 $\frac{5}{8}$
873	2998	27	1	0 $\frac{1}{8}$	826	2836	85	2	0 $\frac{5}{8}$
872	2994	84	1	0 $\frac{3}{8}$	825	2833	42	2	0 $\frac{7}{8}$
871	2991	40	1	0 $\frac{3}{8}$	824	2829	98	2	1
870	2987	97	1	0 $\frac{3}{8}$	823	2826	55	2	1
869	2984	53	1	0 $\frac{3}{8}$	822	2823	11	2	1 $\frac{1}{8}$
868	2981	10	1	0 $\frac{3}{8}$	821	2819	68	2	1 $\frac{1}{8}$
867	2977	06	1	0 $\frac{7}{8}$	820	2816	24	2	1 $\frac{3}{8}$
866	2974	23	1	0 $\frac{7}{8}$	819	2812	81	2	1 $\frac{3}{8}$
865	2970	79	1	1	818	2809	38	2	1 $\frac{3}{8}$
864	2967	36	1	1 $\frac{1}{8}$	817	2805	94	2	1 $\frac{3}{8}$
863	2963	93	1	1 $\frac{1}{8}$	816	2802	51	2	1 $\frac{3}{8}$
862	2960	49	1	1 $\frac{1}{8}$	815	2799	07	2	1 $\frac{7}{8}$
861	2957	06	1	1 $\frac{3}{8}$	814	2795	64	2	1 $\frac{7}{8}$
860	2953	62	1	1 $\frac{3}{8}$	813	2792	20	2	2

M

TARIF RATES AND BRITISH REPORTS FOR MILLIEMES
OF SILVER.

MILL.	Fr.	C.	Dwts.	MILL.	Fr.	C.	Dwts.
1000	218	89	B 18	953	208	60	B 6 $\frac{1}{2}$
999	218	67	17 $\frac{3}{4}$	952	208	38	6 $\frac{1}{2}$
998	218	45	17 $\frac{1}{2}$	951	208	16	6
997	218	23	17 $\frac{1}{4}$	950	207	94	6
996	218	01	17	949	207	73	5 $\frac{3}{4}$
995	217	79	16 $\frac{3}{4}$	948	207	51	5 $\frac{1}{2}$
994	217	58	16 $\frac{1}{2}$	947	207	29	5 $\frac{1}{4}$
993	217	36	16 $\frac{1}{4}$	946	207	07	5
992	217	14	16	945	206	85	4 $\frac{3}{4}$
991	216	92	15 $\frac{3}{4}$	944	206	63	4 $\frac{1}{2}$
990	216	70	15 $\frac{1}{2}$	943	206	41	4 $\frac{1}{4}$
989	216	48	15 $\frac{1}{4}$	942	206	19	4
988	216	26	15	941	205	97	3 $\frac{3}{4}$
987	216	04	14 $\frac{3}{4}$	940	205	76	3 $\frac{1}{2}$
986	215	82	14 $\frac{1}{2}$	939	205	54	3 $\frac{1}{4}$
985	215	61	14 $\frac{1}{4}$	938	205	32	3
984	215	39	14	937	205	10	2 $\frac{3}{4}$
983	215	17	13 $\frac{3}{4}$	936	204	88	2 $\frac{1}{2}$
982	214	95	13 $\frac{1}{2}$	935	204	66	2 $\frac{1}{4}$
981	214	73	13 $\frac{1}{4}$	934	204	44	2
980	214	51	13	933	204	22	1 $\frac{3}{4}$
979	214	29	12 $\frac{3}{4}$	932	204	00	1 $\frac{1}{2}$
978	214	07	12 $\frac{1}{2}$	931	203	79	1 $\frac{1}{4}$
977	213	85	12 $\frac{1}{4}$	930	203	57	1
976	213	64	12	929	203	35	0 $\frac{3}{4}$
975	213	42	12	928	203	13	0 $\frac{1}{2}$
974	213	20	11 $\frac{3}{4}$	927	202	91	0 $\frac{1}{4}$
973	212	98	11 $\frac{1}{2}$	926	202	69	St
972	212	76	11 $\frac{1}{4}$	925	202	47	St
971	212	54	11	924	202	25	W. 0 $\frac{1}{2}$
970	212	32	10 $\frac{3}{4}$	923	202	03	0 $\frac{1}{4}$
969	212	10	10 $\frac{1}{2}$	922	201	82	0 $\frac{1}{2}$
968	211	88	10 $\frac{1}{4}$	921	201	60	1
967	211	67	10	920	201	38	1 $\frac{1}{4}$
966	211	45	9 $\frac{3}{4}$	919	201	16	1 $\frac{1}{2}$
965	211	23	9 $\frac{1}{2}$	918	200	94	1 $\frac{3}{4}$
964	211	01	9 $\frac{1}{4}$	917	200	72	2
963	210	79	9	916	200	50	2 $\frac{1}{4}$
962	210	57	8 $\frac{3}{4}$	915	200	28	2 $\frac{1}{2}$
961	210	35	8 $\frac{1}{2}$	914	200	06	2 $\frac{3}{4}$
960	210	13	8 $\frac{1}{4}$	913	199	85	3
959	209	91	8	912	199	63	3 $\frac{1}{4}$
958	209	70	7 $\frac{3}{4}$	911	199	41	3 $\frac{1}{2}$
957	209	48	7 $\frac{1}{2}$	910	199	19	3 $\frac{3}{4}$
956	209	26	7 $\frac{1}{4}$	909	198	97	4
955	209	04	7	908	198	75	4 $\frac{1}{4}$
954	208	82	6 $\frac{3}{4}$	907	198	53	4 $\frac{1}{2}$

TARIF RATES AND BRITISH REPORTS FOR MILLIEMES
OF SILVER.

Mill.	Fr.	C.	Dwts.	Mill.	Fr.	C.	Dwts.
906	198	31	W 4 $\frac{1}{2}$	859	188	03	W 16
905	198	09	5	858	187	81	16 $\frac{1}{2}$
904	197	88	5 $\frac{1}{2}$	857	187	59	16 $\frac{1}{2}$
903	197	66	5 $\frac{1}{2}$	856	187	37	16 $\frac{3}{4}$
902	197	44	5 $\frac{3}{4}$	855	187	15	17
901	197	22	6	854	186	93	17 $\frac{1}{2}$
900	197	00	6	853	186	71	17 $\frac{3}{4}$
899	196	78	6 $\frac{1}{2}$	852	186	49	17 $\frac{3}{4}$
898	196	56	6 $\frac{1}{2}$	851	186	27	18
897	196	34	6 $\frac{3}{4}$	850	186	06	18
896	196	12	7	849	185	84	18 $\frac{1}{2}$
895	195	91	7 $\frac{1}{2}$	848	185	62	18 $\frac{1}{2}$
894	195	69	7 $\frac{1}{2}$	847	185	40	18 $\frac{3}{4}$
893	195	47	7 $\frac{3}{4}$	846	185	18	19
892	195	25	8	845	184	96	19 $\frac{1}{2}$
891	195	03	8 $\frac{1}{2}$	844	184	74	19 $\frac{1}{2}$
890	194	81	8 $\frac{1}{2}$	843	184	52	19 $\frac{3}{4}$
889	194	59	8 $\frac{3}{4}$	842	184	30	1
888	194	37	9	841	184	09	1
887	194	15	9 $\frac{1}{2}$	840	183	87	1
886	193	94	9 $\frac{1}{2}$	839	183	65	1
885	193	72	9 $\frac{3}{4}$	838	183	43	1
884	193	50	10	837	183	21	1
883	193	28	10 $\frac{1}{2}$	836	182	99	1
882	193	06	10 $\frac{1}{2}$	835	182	77	1
881	192	84	10 $\frac{3}{4}$	834	182	55	1
880	192	62	11	833	182	33	1
879	192	40	11 $\frac{1}{2}$	832	182	12	1
878	192	18	11 $\frac{1}{2}$	831	181	90	1
877	191	97	11 $\frac{3}{4}$	830	181	68	1
876	191	75	12	829	181	46	1
875	191	53	12	828	181	24	1
874	191	31	12 $\frac{1}{2}$	827	181	02	1
873	191	09	12 $\frac{1}{2}$	826	180	80	1
872	190	87	12 $\frac{3}{4}$	825	180	58	1
871	190	65	13	824	180	36	1
870	190	43	13 $\frac{1}{2}$	823	180	15	1
869	190	21	13 $\frac{1}{2}$	822	179	93	1
868	190	00	13 $\frac{3}{4}$	821	179	71	1
867	189	78	14	820	179	49	1
866	189	56	14 $\frac{1}{2}$	819	179	27	1
865	189	34	14 $\frac{1}{2}$	818	179	05	1
864	189	12	14 $\frac{3}{4}$	817	178	83	1
863	188	90	15	816	178	61	1
862	188	68	15 $\frac{1}{2}$	815	178	39	1
861	188	46	15 $\frac{1}{2}$	814	178	18	1
860	188	24	15 $\frac{3}{4}$	813	177	96	1

NETHERLAND REPORTS.

The Netherland reports of both Gold and Silver are made in Millièmes fine, and they therefore bear the same relation to the British Standards as those of France.

The valuation of Gold is made from the fixed price of Florins 1442 60 Cents, per Netherland Pond, with an Agio or Premium that is usually about 13 or 14 per Cent.

The valuation of Silver is made from the fine weight, at a variable price per Pond without any Agio.

The Mint at Utrecht receives Gold at the fixed rate of Florins 1442 60 Cents without any Agio, and renders Ducats in return at the rate of 5 Florins each, which is so much under the usual market price of this Coin, as to fully compensate for the loss of the Agio.

In the valuation of either Gold or Silver, the practice is to cast out the fine weight, and to find its value either from the fixed price with the Agio for Gold, or from the market price for Silver.

Thus, Ponden 6.802 of Gold 997 fine, at $14\frac{1}{2}$ premium.

Ponden 6.802 \times 997 = Ponden 6.781,594

Florins 1442.60 \times 6.781,594 = Flor. 9783 13 Cents.

$14\frac{1}{2}$ per Cent — 1418 55

Amount, Florins 11201 68 Cents.

Also, Ponden 11.408 of Silver 925 fine, at 104 50 Flor.

Ponden 11.408 \times 925 = Ponden 10.552,4

Florins 10.552,4 \times 104.50 = Florins 1102 73 Cents.

EXERCISES.

Ex. 1. Ponden 12.848 of Gold 911 fine, at $14\frac{1}{2}$ premium.

2. Ponden 21.753 of Silver 896 fine, at 104.50 Florins.

3. What number of Ducats should be rendered for Ponden 31.828 of Gold reported 946 fine?

PRODUCTS.

Ex. 1. Florins 19291.06

Ex. 2. Florins 2036.68

Ex. 3. Ducats 8687—66 Cents over.

GERMAN REPORTS.

The Assay Mark of 288 Grains is, throughout Germany, the integer for Assays both of Gold and of Silver.

For Assays of Gold, the Assay Mark is divided into 24 Carats, each of 12 Grains.

For Assays of Silver, the Assay Mark is divided into 16 Loths, each of 18 Grains.

The practice of German Assayers is to report the fine metal only, and the valuation of Silver is made from the fine weight, at the specified price per Mark ;* as,

Fine Silver—13 Marks 10 Sch. Bco. per Mark ;

and the same is partially also the mode of valuing Gold ; but at Hamburg, where the chief operations of this nature in Germany are made, and also in some other places of the Continent, the valuation of Gold is calculated from the fine weight, at a stipulated price per Ducat, reckoning 67 Ducats to be coined from the Cologne Mark Weight of Gold, of the purity of $23\frac{1}{4}$ Carats fine.

The value of Gold is therefore quoted by the price per Ducat ; as,

103 Schillings Banco al Marco.

* With respect to the word Mark it must be remembered that
The Assay Mark is the integer for fineness ;
The Cologne Mark, for weight ; and
The Mark in Banco and Currency for money of account and Coin.

EXAMPLE 1.

To compare the German Gold-report of 23 Carats 11 Grains fine, with British Standard.

Directions.—The German Carats being reckoned as English Carats, divide the German Grains by 3, and if 1 remains call it $\frac{1}{2}$, or if 2, $\frac{1}{2}$ or $\frac{2}{3}$ of an English Grain;* then find the difference between this purity and 22 Carats for the Betterness or Worseness.

$$\begin{array}{rcl}
 \text{German Car. 23 11 Gr.} & = & 23 \quad 3\frac{2}{3} \quad \text{British.} \\
 & & 22 \quad 0 \quad \text{Standard.} \\
 \hline
 & & \text{Carat 1 } 3\frac{2}{3} \quad \text{Better.} \\
 & & \hline
 \end{array}$$

EXAMPLE 2.

To compare the German Silver-report of 13 Loths 15 Grains fine, with British Standard.

Directions.—Take the difference between the given report and 14 Loths 14.4 Grs, which are equal to 11 Oz. 2 Dwts, the British Standard for Silver; then reduce, if necessary, the difference to Grains and 10 ths of Grains, and divide the result by 12 for the Betterness or Worseness in Dwts.

$$\begin{array}{rcl}
 \text{Loths 14 14.4 Grs.} & & \\
 \text{Given report 13 15} & & \\
 \hline
 12 \quad) & 17 \quad 4 & \text{tenths of Grains.} \\
 \hline
 \text{Worse} & 14\frac{1}{2} & \text{Dwts.} \\
 & \hline
 \end{array}$$

Observe, that in dividing by 12, if the remainder is not exactly half a Dwt, it is to be reckoned at the next lower $\frac{1}{2}$ Dwt for Betterness, and at the next higher, for Worseness.

* When the German report is made in half or quarter grains, multiply the remainder by 8 and divide the product by 3, for 8 ths of English grains.

EXAMPLE 3.

To find the value of a Bar of Gold weighing Mks 49 14 $\frac{1}{8}$ Loths, reported 21 Carats 6 $\frac{1}{2}$ Grains fine, at 103 Schillings per Ducat al Marco.

			* 49 14 $\frac{1}{8}$	Marks and Loths ?
Carats	24	—	* 21 6 $\frac{1}{2}$	Car. and grs. fine.
Fine	23 $\frac{1}{2}$	—	24	Ducat Standard.
Mk	1	—	67	Ducats.
67 ÷ 23 $\frac{1}{2}$ =				2.85106 fixed number.
				21
				<hr/> 59.87226
$\frac{1}{2}$	-	-	1.42553	for 6 Grs.
$\frac{1}{12}$	-	-	.11879	$\frac{1}{2}$ Gr.
				<hr/> 61.41658
				49
				<hr/> 3009.41242
				for 49 Marks.
$\frac{1}{2}$	-	-	30.7082	8 Loths
$\frac{1}{2}$	-	-	15.3541	4 —
$\frac{1}{2}$	-	-	7.6771	2 —
$\frac{1}{16}$	-	-	.4798	$\frac{1}{8}$ —
Ducats	3063	63	—	100 ths at 103 Sch. Bco.
				<hr/>
				Sch.
				306363 for 100 Sch.
				9191 — 3 —
				<hr/>
				16) 315554
Value	Mks 19722 2 Sch. Banco.			

The estimation of the fractional parts of a Ducat is, in business, made in Ducat Pfennings of 96 to a Ducat ; therefore the above 63-100 ths are to be reckoned 61 Ducat Pfennings.

EXAMPLE 4.

To find the amount of a bar of Silver, weighing Mks 49 14 Loths, reported 14 Loths 8 Grs fine, at 27 Mks 10 Sch. Bco. per Mark fine.

	M	l	g	
$\frac{1}{2}$	-	-	49 14 0	Full Weight.
$\frac{1}{2}$	-	-	24 15 0	Fine weight at 8 Loths.
$\frac{1}{2}$	-	-	12 7 9	- - 4 -
$\frac{1}{6}$	-	-	6 3 13	- - 2 -
$\frac{1}{3}$	-	-	1 0 11	- - 6 Grs.
			5 9	- - 2 -
Hamburg Marks	45	0	6	Fine weight.
	M	s	pf	
$\frac{1}{2}$	-	-	45 0 4	Value at 1 Bco. Mk.
			27	
	1215	9	0	for 27 Marks.
$\frac{1}{4}$	-	-	22 8 2	- 8 Sch.
			5 10 0	- 2 -
Banco Marks	1243	11	0	Amount required.

The Pfennings in the amount are reckoned at 6, when they are from 3 to 9; above that number they are called 1 Sch. and at 3 and under they are not reckoned.

EXERCISES.

Ex. 1. What is the amount of a Bar of Gold, weighing Mks 33 12 Loths reported 22 Car. 6 Grs fine, at 103 Sch. per Ducat al Marco ?

2. What is the amount of a Bar of Silver, weighing Mks 38 14 $\frac{1}{2}$ Loths reported 15 Loths 12 Grs. fine, at Mks 27 12 Sc per Mark fine ?

PRODUCTS.

Ex. 1. Ducats 2165 02 Pf Value Mks 13937 5 Sc.
 2. Fine Weight, Mks 38 1 10 — Mks 1057 3 Sc.

ARBITRATIONS OF BULLION.

ARBITRATED PARS OF EXCHANGE.

The calculations of arbitrated Pars of Exchange from Operations in Bullion, are conducted in a similar manner to the calculations of arbitrated Rates from Bills of Exchange ; but besides the prices in the two places concerned, they require the further data of the relations between their weights for Gold and Silver, and the degrees of fineness at which the prices are reckoned.

In England the price of Bullion is rated at Standard fineness for both Gold and Silver ; but Doubloons, Dollars, and some other Coins, when in large quantities, are usually valued at variable prices per Oz. corresponding with their estimated fineness.

When Pars of Exchange are formed from Coins, they are usually reckoned from their mintage regulations, with regard to weight and fineness, and from their value as money in each of the two Countries ; but this valuation is but of little practical utility, because, 1st, in this Country Gold is the established medium of payment, and the Gold Coin cannot be sold at a premium or discount ; whereas on the Continent, generally, Gold is not the medium, and the Gold Coins are seldom current at only the exact price legally or nominally given to them ; —and, 2 ndly, with respect to Silver, the British mintage price, 66 d per Oz. is so high in comparison with the price that Standard Silver has borne in this Country for many years past, and it is also so much higher in comparison with Gold than it is upon the Continent, that it cannot with any propriety be used as one of the terms for finding a par of exchange. — For these reasons

N. B. The calculations of Arbitrations of Bullion are divided into Arbitrated Rates or Pars of Exchange and Arbitrated Prices.

therefore, in all our valuations of this nature, we have used the mintage price only for Gold, and we have used the rate of 60'd per Oz. Standard for Silver, both because it has long been its full market value in this country, and because it affords a very convenient fixed value, to be proportioned to any other price to which Silver may vary.

The relations between the Gold and Silver weight of this Country, and those of the chief Countries of Europe, have been given in the table, page 4, and the modes of valuation and their standards of fineness have been explained in the preceding pages, but as the former are hardly minute enough for our present object, it is necessary to state the absolute weight of each Integer, as is done in the introduction to each of the following departments, for the places selected for the operations ; viz.

Paris — in Bar Gold and Silver, Doubloons and Dollars.

Amsterdam — the same.

Hamburg — the same.

Frankfort — the same except Doubloons.

Berlin, Petersburg, Naples, and Lisbon, in Bar Gold and Silver.

To each of the formulæ a fixed number* is first found, independent of either price, and then a fixed number for the assumed price per Ounce ; and to facilitate the calculations at other prices a table is given at the foot of each formula, for the prices within the usual extreme limits of the fluctuations, for each of the first four places, but they are omitted to the remaining formulæ, as being for places with which this Country transacts but little business of this nature.

* As directed in page 93, the fixed number is formed by multiplying the numbers of the fixed terms on each side of the Equation together, and dividing the product of the consequents, (the right hand terms,) by the product of the antecedents.

The variable terms are as before marked with an Asterisk.

PARIS.

The Gold and Silver weight is the Kilogramme of 1000 Grammes: it is reckoned equal to 15434 Grains English Troy Weight, making the Oz. Troy of 480 Grains equal to 31.1002 Grammes. Hence,

1000 Oz. British Standard Gold	=	Kilogr.	28.5085	F. Gold.
1000 Oz. British Standard Silver	=	—	28.7677	F. Silv.
1000 Oz. Doll. Worse 7 Dwts	=	—	27.8606	Ditto.
7½ Dwts	=	—	27.7958	Ditto.
8 Dwts	=	—	27.7310	Ditto.

The British Standard for Gold has no exact Tarif price, but as being 11-12 ths or 916.66 fine, it is rated at 3148.24 Francs.

Bar Silver at the British Standard purity of 37-40 ths, or 925 fine, is tarified at 202.47 Francs per Kilogramme.

Dollar Silver is usually rated as being 896 fine, (7 Dwts Worse,) at 196.12 Francs per Kilogramme.—For any other degree of purity from 890 fine, a correction to this rate is to be applied from the table page 177, according to the method of the example there given.

Dollars are also sold in Paris by the piece,* for which there is a separate formula.

In applying the Charges or comparing the Rates,

25½ or 24 Cents are reckoned 1 per Cent.

22	—	21	—	. . . . .	$\frac{7}{8}$	—
19	—	18	—	. . . . .	$\frac{3}{4}$	—
15½	—	15	—	. . . . .	$\frac{5}{8}$	—
12½	—	12	—	. . . . .	$\frac{1}{2}$	—
9½	—	9	—	. . . . .	$\frac{3}{8}$	—
6½	—	6	—	. . . . .	$\frac{1}{4}$	—
		3	—	. . . . .	$\frac{1}{8}$	—

* It may be more correctly said, that in Paris they are usually melted and sold as Bar Silver according to their purity, and at Lâlle, and generally at the French mints, they are sold by the piece.

PARIS.

Bar Gold in London is 77 s 6 d per Oz. Standard ; in Paris, $4\frac{1}{2}$ per Mille Premium ; required the arbitrated Rate or Par of Exchange.

		20	Shillings ?
$77\frac{1}{2}$ *	—	1	Oz. Standard.
1	—	31.1002	Grammes.
1000	—	3148.24	Frs and Cts.
1000	—	* 1004 $\frac{1}{2}$	With Premium.
$77\frac{1}{2}$	)	1958217	Fixed Number.
<hr/>			
		25.267	Do. for 77 s 6d
$25.26 \times 4 =$	- .101	Prem. 4 per Mille.	
	- .013	— $\frac{1}{2}$ —	
<hr/>			
Francs	25 38,1	Cents.	
<hr/>			

~~~~~

Fixed Numbers for Prices per Oz.

---

| s  | d                |   |   |   |        |
|----|------------------|---|---|---|--------|
| 77 | 6                | . | . | . | 25.267 |
| -  | 9                | . | . | . | - .186 |
| -  | 10 $\frac{1}{2}$ | . | . | . | - .146 |
| 78 | -                | . | . | . | - .105 |
| -  | 3                | . | . | . | - .025 |
| -  | 6                | . | . | . | 24.945 |



## PARIS.

---

Doubloons in London are 75 s 3 d per Oz ; in Paris, Frs 82 35 Cents each ; required the arbitrated Rate of Exchange.

|       |   |         |             |
|-------|---|---------|-------------|
|       |   | 20      | Shillings ? |
| 75½ * | — | 1       | Ounce.      |
| 868   | — | 1000    | Doubloons   |
| 1     | — | * 82.35 | Francs.     |

|             |   |         |                    |
|-------------|---|---------|--------------------|
| 75½         | ) | 230414  | Fixed Number.      |
|             |   | <hr/>   |                    |
|             |   | 30620   | Ditto for 75 s 3 d |
| Multiply by |   | 82.35   |                    |
|             |   | <hr/>   |                    |
| Francs      |   | 25 21,5 | Cents.             |

~~~~~

Fixed Numbers for Prices per Oz.

s	d		s	d	
73	-	. . . 31564	76	-	. . . 30318
- 3 - 456	- 3	.	. . . - 218
- 6 - 349	- 6	.	. . . - 119
- 9 - 243	- 9	.	. . . - 021
74	-	. . . - 137	77	-	. . . 29924
- 3 - 032	- 3	.	. . . - 827
- 6 30928	- 6	.	. . . - 731
- 9 - 825	- 9	.	. . . - 635
75	-	. . . - 722	78	-	. . . - 540
- 3 - 620	- 3	.	. . . - 446
- 6 - 518	- 6	.	. . . - 352
- 9 - 418	- 9	.	. . . - 259

PARIS.

Bar Silver in London is $59\frac{1}{2}$ d per Oz. Standard ; in Paris, 4 per Mille Premium ; required the arbitrated Rate of Exchange.

		240	Pence ?
$59\frac{1}{2}$ *	—	1	Oz. Standard.
1	—	31.1002	Grammes.
1000	—	202.47	Francs.
1000	—	* 1004	With Premium.

$59\frac{1}{2}$	)	1511245	Fixed Number.
<hr/>			
		25.399	Do. for $59\frac{1}{2}$ d
$25.3 \times 4 =$		.101	Prem. 4 per Mille.
<hr/>			
Francs	25	50	Cents.
<hr/>			

~~~~~

Fixed Numbers for Prices per Oz.

| d               |   |   |   | d      |                 |   |   |   |        |
|-----------------|---|---|---|--------|-----------------|---|---|---|--------|
| 59              | - | . | . | 25.614 | 60              | - | . | . | 25.187 |
| - $\frac{1}{8}$ | . | . | . | -.560  | - $\frac{1}{8}$ | . | . | . | -.135  |
| - $\frac{1}{4}$ | . | . | . | -.506  | - $\frac{1}{4}$ | . | . | . | -.083  |
| - $\frac{3}{8}$ | . | . | . | -.453  | - $\frac{3}{8}$ | . | . | . | -.031  |
| - $\frac{1}{2}$ | . | . | . | -.399  | - $\frac{1}{2}$ | . | . | . | 24.979 |
| - $\frac{5}{8}$ | . | . | . | -.346  | - $\frac{5}{8}$ | . | . | . | -.928  |
| - $\frac{3}{4}$ | . | . | . | -.293  | - $\frac{3}{4}$ | . | . | . | -.876  |
| - $\frac{7}{8}$ | . | . | . | -.240  | - $\frac{7}{8}$ | . | . | . | -.825  |

## PARIS.

Dollars in London are  $57\frac{1}{2}$  d per Oz.; in Paris, Frs. 5.30 each; required the arbitrated Rate of Exchange.

|                   |   |         |                           |
|-------------------|---|---------|---------------------------|
|                   |   | 240     | Pence ?                   |
| $57\frac{1}{2}$ * | — | 1       | Ounce.                    |
| 866               | — | 1000    | Dollars.                  |
| 1                 | — | * 5.30  | Francs.                   |
| $57\frac{1}{2}$   | ) | 277136  | Fixed Number.             |
|                   |   | 48198   | Do. for $57\frac{1}{2}$ d |
|                   |   | 530     |                           |
|                   |   | 14459   |                           |
|                   |   | 24099   |                           |
| Francs            |   | 25 54,5 | Cents.                    |

## Fixed Numbers for Prices per Oz.

|                  |             |                  |             |
|------------------|-------------|------------------|-------------|
| d                |             | d                |             |
| 56 $\frac{1}{2}$ | . . . 49050 | 57 $\frac{3}{8}$ | . . . 47989 |
| - $\frac{5}{8}$  | . . . 48942 | - $\frac{7}{8}$  | . . . - 885 |
| - $\frac{3}{4}$  | . . . - 834 | 58 -             | . . . - 782 |
| - $\frac{7}{8}$  | . . . - 727 | - $\frac{1}{8}$  | . . . - 679 |
| 57 -             | . . . - 620 | - $\frac{1}{4}$  | . . . - 577 |
| - $\frac{1}{8}$  | . . . - 514 | - $\frac{3}{8}$  | . . . - 475 |
| - $\frac{1}{4}$  | . . . - 408 | - $\frac{1}{2}$  | . . . - 374 |
| - $\frac{3}{8}$  | . . . - 303 | - $\frac{5}{8}$  | . . . - 273 |
| - $\frac{1}{2}$  | . . . - 198 | - $\frac{3}{4}$  | . . . - 172 |
| - $\frac{5}{8}$  | . . . - 093 | - $\frac{7}{8}$  | . . . - 072 |

## PARIS.

Dollars in London are  $57\frac{1}{2}$  d per Oz.; in Paris, 4 per Mille  
Premium; required the arbitrated Rate of Exchange.

|                   |   |         |               |
|-------------------|---|---------|---------------|
|                   |   | 240     | Pence ?       |
| $57\frac{1}{2}$ * | — | 1       | Ounce,        |
| 1                 | — | 31.1002 | Grammes.      |
| 1000              | — | 196.12  | Francs.       |
| 1000              | — | * 1004  | With Premium. |

|                  |   |               |                           |
|------------------|---|---------------|---------------------------|
| $57\frac{1}{2}$  | ) | 1463849       | Fixed Number.             |
|                  |   | <u>25.458</u> | Do. for $57\frac{1}{2}$ d |
| $254 \times 4 =$ |   | <u>.102</u>   | Prem. 4 per Mille.        |
|                  |   | Francs 25 56  | Cents.                    |

Fixed Numbers for Prices per Oz. at 896 Fine.

| d               |   |          | d               |   |          |
|-----------------|---|----------|-----------------|---|----------|
| $56\frac{1}{2}$ | . | . 25.909 | $57\frac{3}{4}$ | . | . 25.348 |
| - $\frac{5}{8}$ | . | . .852   | - $\frac{7}{8}$ | . | . .293   |
| - $\frac{3}{4}$ | . | . .795   | 58 -            | . | . .239   |
| - $\frac{7}{8}$ | . | . .738   | - $\frac{1}{8}$ | . | . .184   |
| 57 -            | . | . .682   | - $\frac{1}{4}$ | . | . .130   |
| - $\frac{1}{8}$ | . | . .625   | - $\frac{3}{8}$ | . | . .077   |
| - $\frac{1}{4}$ | . | . .569   | - $\frac{1}{2}$ | . | . .023   |
| - $\frac{3}{8}$ | . | . .514   | - $\frac{5}{8}$ | . | . 24.970 |
| - $\frac{1}{2}$ | . | . .458   | - $\frac{3}{4}$ | . | . .917   |
| - $\frac{5}{8}$ | . | . .403   | - $\frac{7}{8}$ | . | . .864   |

## DOLLAR SILVER AT PARIS.

Table of Parts for Purities from 890 to 902 Fine.

| Subt.<br>for | d<br>56½ | d<br>57 | d<br>57½ | d<br>58 | d<br>58½ | Add<br>for |
|--------------|----------|---------|----------|---------|----------|------------|
| 890          | 173      | 172     | 170      | 169     | 168      | 902        |
| 891          | 145      | 143     | 142      | 141     | 140      | 901        |
| 892          | 116      | 115     | 114      | 113     | 112      | 900        |
| 893          | 87       | 86      | 85       | 85      | 84       | 899        |
| 894          | 58       | 57      | 57       | 56      | 56       | 898        |
| 895          | 29       | 29      | 28       | 28      | 28       | 897        |

## EXAMPLE

Of the application of this Table.

Dollar Silver, reported 893 Fine.

London Price, 57½ d per Oz. — Paris, 4 per Mille.

By the preceding Table for 896 fine,

the Fixed Number for 57½ d is . . . 25.458

Subtract as above for 893 . . . . . 85

25.373 \*

4 per Mille . . . 101

Francs 25.47  $\frac{4}{10}$ 

\* The same result is obtained by working this Equation.

240 Pence ?

57½ \* — 1 Oz. Dollar Silver.

1 — 31.1002 Grammes.

1000 — \* 893 Fine.

900 — 197 Francs.

Result, Francs 25 37,3 Cents.

N

## AMSTERDAM.

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The Netherland Pond is of the same weight as the French Kilogramme, viz. 15434 Grains, or 2 lb 7 oz. 3 dwts 2 grs Troy, and it is similarly divided into 1000 equal parts called Wigties or Grammes; hence the same relations exist between the British and Netherland Weights of Standard and fine Gold, and Silver, as those given in page 171.

Also as the Mint at Utrecht receives the Pond of fine Gold at the fixed price of Florins 1442.60, and delivers Ducats in return at the fixed price of 5 Florins each,

1000 Oz. of British Standard Gold produce 8225.269 Ducats.

Doubloons bought in London at variable prices per Oz. are usually melted into Bars before they are sold at Amsterdam—Spanish Doubloons from 1 Car.  $0\frac{3}{4}$  Gr. Worse to 1 Car.  $0\frac{1}{2}$  Gr. Worse, generally render about 867 fine; the Formula and fixed Numbers are therefore calculated for this purity, variations being estimated in the manner directed page 181.

---

In estimating the Charges and the differences in the Rates.

| 12               | Cents | or | 2.4 | Stivers | are | 1             | per Cent. |
|------------------|-------|----|-----|---------|-----|---------------|-----------|
| 10 $\frac{1}{2}$ | —     | .  | 2.1 | —       | .   | $\frac{7}{8}$ | —         |
| 9                | —     | .  | 1.8 | —       | .   | $\frac{3}{4}$ | —         |
| 7 $\frac{1}{2}$  | —     | .  | 1.5 | —       | .   | $\frac{5}{8}$ | —         |
| 6                | —     | .  | 1.2 | —       | .   | $\frac{1}{2}$ | —         |
| 4 $\frac{1}{2}$  | —     | .  | .9  | —       | .   | $\frac{3}{8}$ | —         |
| 3                | —     | .  | .6  | —       | .   | $\frac{1}{4}$ | —         |
| 1 $\frac{1}{2}$  | —     | .  | .3  | —       | .   | $\frac{1}{8}$ | —         |

---

N. B. The Florin in the Netherlands Rate being divided into 100 Cents, and in the London Rate into Stivers, the Cents in the arbitrated Rates must be divided by 5, if it is required to express them in Stivers.

## AMSTERDAM.

Bar Gold in London is 77 s 6 d per Oz. Standard; in Amsterdam, 14 per Cent Premium; required the arbitrated Rate of Exchange.

|         |         |         |                      |
|---------|---------|---------|----------------------|
|         |         | 20      | Shillings ?          |
| 77½ *   | —       | 1       | Oz. Standard.        |
| 12      | —       | 11      | Fine.                |
| 1       | —       | 31.1002 | Wigties.             |
| 1000    | —       | 1442.60 | Florins.             |
| 100     | —       | * 114   | With Premium.        |
|         |         |         |                      |
| 77½     |         | 822527  | Fixed Number.        |
|         |         |         |                      |
|         |         | 10.613  | Do. for 77 s 6 d     |
|         |         | 1.061   | Premium 10 per Cent. |
|         |         | .425    | — 4 —                |
|         |         |         |                      |
| Florins | 12 09,9 | Cents.  |                      |

### Fixed Numbers for Prices per Oz.

| s  | d   |   |   |   |        |
|----|-----|---|---|---|--------|
| 77 | 6   | . | . | . | 10.613 |
| -  | 9   | . | . | . | -.579  |
| -  | 10½ | . | . | . | -.562  |
| 78 | -   | . | . | . | -.545  |
| -  | 3   | . | . | . | -.511  |
| -  | 6   | . | . | . | .478   |
| -  | 9   | . | . | . | .445   |

## AMSTERDAM

Doubloons in London are 75 s 3 d per Oz. ; in Amsterdam,  
14 per Ct. Premium ; required the arbitrated Rate of Exchange.

|       |   |         |                    |
|-------|---|---------|--------------------|
|       |   | 20      | Shillings ?        |
| 75½ * | — | 1       | Oz. Doubloon Gold. |
| 1000  | — | 867     | Fine.              |
| 1     | — | 31.1002 | Wigties.           |
| 1000  | — | 1442.60 | Florins.           |
| 100   | — | * 114   | Florins.           |

|       |        |                    |
|-------|--------|--------------------|
| 75½ ) | 777961 | Fixed Number       |
|       | 10.338 | Do. for 75 s 3 d   |
|       | 1.034  | Prem. 10 per Cent. |
|       | .413   | — 4 —              |

Florins 11 78.5 Cents.

~~~~~  
Fixed Numbers for Prices per Oz. at 867 Fine.

s	d		s	d	
73	-	10657	76	-	10236
-	3	- 621	-	3	- 203
-	6	- 585	-	6	- 169
-	9	- 549	-	9	- 136
74	-	- 513	77	-	- 103
-	3	- 478	-	3	- 071
-	6	- 442	-	6	- 038
-	9	- 407	-	9	- 006
75	-	- 373	78	-	9974
-	3	- 338	-	3	- 942
-	6	- 304	-	6	- 910
-	9	- 270	-	9	- 879

DOUBLOON GOLD AT AMSTERDAM.

Table of Parts for Purities from 860 to 874.

Subt. for	s 73	s 74	s 75	s 76	s 77	s 78	Add for
860	86	85	84	83	82	81	874
861	74	73	72	71	70	69	873
862	61	61	60	59	58	58	872
863	49	48	48	47	47	46	871
864	37	36	36	35	35	35	870
865	25	24	24	24	23	23	869
866	12	12	12	12	12	12	868

EXAMPLE

Of the application of this Table.

Columbian Doubloons, reported 861 Fine.

London Price, 73 s 8 d — Amsterdam, 14 per Ct.

By the preceding Table

73 s 8 d and 867 fine 10.561

By the above — 861 fine 73

10.488 *

10 per Cent. . . . 1.049

4 per Cent.420

Florins 11.95,7

* The Equation for the above is

20 Shillings ?

73 8 — 1 Oz. Doubloon Gold.

1000 — 861 Fine.

1 — 31.1002 Wigties.

1000 — 1442.60 Florins.

100 — 114 Florins.

Result 10.48,7 nearly as above.

AMSTERDAM.

Bar Silver in London is $59\frac{1}{2}$ d per Oz. Standard ; in Amsterdam, $103\frac{3}{4}$ Florins per Pond Fine ; required the arbitrated Rate of Exchange.

		240 Pence ?
$59\frac{1}{2}$ *	—	1 Oz. Standard.
40	—	37 Fine.
1	—	31.1002 Wigties.
1000	—	* $103\frac{3}{4}$ Florins.

$59\frac{1}{2}$)	690.424	Fixed Number.
<hr/>			
		11.604	Do. for $59\frac{1}{2}$ d
$116 \times 3 =$.348	for 3 Florins.
1-4 th	.	.087	$\frac{3}{4}$ —
<hr/>			
Florins		12 03,9	Cents.
<hr/>			

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Fixed Numbers for Prices per Oz.

| d               |   |   | d      |                 |   |   |        |
|-----------------|---|---|--------|-----------------|---|---|--------|
| 59 -            | . | . | 11.702 | 60 -            | . | . | 11.507 |
| - $\frac{1}{8}$ | . | . | .677   | - $\frac{1}{8}$ | . | . | .483   |
| - $\frac{1}{4}$ | . | . | .653   | - $\frac{1}{4}$ | . | . | .459   |
| - $\frac{3}{8}$ | . | . | .628   | - $\frac{3}{8}$ | . | . | .436   |
| - $\frac{1}{2}$ | . | . | .604   | - $\frac{1}{2}$ | . | . | .412   |
| - $\frac{5}{8}$ | . | . | .579   | - $\frac{5}{8}$ | . | . | .388   |
| - $\frac{3}{4}$ | . | . | .555   | - $\frac{3}{4}$ | . | . | .365   |
| - $\frac{7}{8}$ | . | . | .531   | - $\frac{7}{8}$ | . | . | .342   |

# AMSTERDAM.

Dollars in London are  $57\frac{1}{2}$  d per Oz. ; in Amsterdam, 2.50 Florins each ; required the arbitrated Rate of Exchange.

|                   |   |         |                           |
|-------------------|---|---------|---------------------------|
|                   |   | 240     | Pence ?                   |
| $57\frac{1}{2}$ * | — | 1       | Oz.                       |
| 866               | — | 1000    | Dollars.                  |
| 1                 | — | * 2.50  | Florins.                  |
| $57\frac{1}{2}$   | ) | 277136  | Fixed Number.             |
|                   |   | 48198   | Do. for $57\frac{1}{2}$ d |
| Multiply by       |   | 2.50    |                           |
| Florins           |   | 12 94,9 | Cents.                    |

## Fixed Numbers for Prices per Oz.

| d                |   |       | d                |   |       |
|------------------|---|-------|------------------|---|-------|
| 56 $\frac{1}{2}$ | . | 49051 | 57 $\frac{3}{4}$ | . | 47989 |
| - $\frac{5}{8}$  | . | 48942 | - $\frac{7}{8}$  | . | - 885 |
| - $\frac{3}{4}$  | . | - 835 | 58 -             | . | - 782 |
| - $\frac{7}{8}$  | . | - 727 | - $\frac{1}{8}$  | . | - 679 |
| 57 -             | . | - 620 | - $\frac{1}{4}$  | . | - 577 |
| - $\frac{1}{8}$  | . | - 514 | - $\frac{3}{8}$  | . | - 475 |
| - $\frac{1}{4}$  | . | - 408 | - $\frac{1}{2}$  | . | - 374 |
| - $\frac{3}{8}$  | . | - 303 | - $\frac{5}{8}$  | . | - 273 |
| - $\frac{1}{2}$  | . | - 198 | - $\frac{3}{4}$  | . | - 172 |
| - $\frac{5}{8}$  | . | - 093 | - $\frac{7}{8}$  | . | - 072 |

## HAMBURG.

---

The Gold and Silver weight is the Cologne Mark, which according to the Standard of the Hamburg Bank, is equal to 3608 Grains, or 7 Oz. 10 dwts 8 grs. English Troy, making 60 Marks equal to 451 Oz. Troy.

Hence 5 Cologne Marks of fine Gold equal 41 Oz. of British standard Gold, and it is usual to reckon 60 Cologne Marks of fine Silver equal to 451 Oz. Troy of British standard Silver, but exactly, the latter are equal to  $60\frac{1}{11}$  Cologne Marks, Fine.

Also from the valuation of the Mark weight of Gold  $23\frac{1}{2}$  Carats Fine, at 67 Ducats.

1000 Oz. British Standard Gold = 8344.577 Ducats.

In the formula for Doubloons, the prices are taken for Doubloon Gold in London, and for Bar Gold at Hamburg; the purity is reckoned at 20 Carats  $9\frac{1}{2}$  Grs Fine, which estimate is the same as Worse Car. 1  $0\frac{3}{4}$  Gr., and other degrees of purity are calculated from the Table of parts.

The formula for Dollar Silver is calculated at 14 Loths 5 Grs Fine, the variations in the fineness being also calculated from a Table of parts.

Instead of fixed numbers for the formula for Silver, the quotient of the division by the number of Pence per Oz. is multiplied by  $27\frac{1}{2}$ , and the result valued in Marks and Schillings, is the rate of Exchange at 27 Marks 8 Sch. per Hamburg Mark Fine; to which are to be added, the Schillings and parts taken from the auxiliary Table, for the excess of the price above 27 Mks 8 Sch.

---

In estimating the Charges and Differences in the rates of Exchange, taking 13 Mks 8 Sch. as an average rate :

| Schillings | 2.16-100 ths | are | 1             | per Cent. |
|------------|--------------|-----|---------------|-----------|
| 1.89       | —            | —   | $\frac{7}{8}$ | —         |
| 1.62       | —            | —   | $\frac{3}{4}$ | —         |
| 1.35       | —            | —   | $\frac{5}{8}$ | —         |
| 1.08       | —            | —   | $\frac{1}{2}$ | —         |
| 0.81       | —            | —   | $\frac{3}{8}$ | —         |
| 0.54       | —            | —   | $\frac{1}{4}$ | —         |
| 0.27       | —            | —   | $\frac{1}{8}$ | —         |

## HAMBURG.

---

Bar Gold in London is 77 s 6 d per Oz. Standard ; in Hamburg  $103\frac{1}{4}$  Schillings per Ducat ; required the arbitrated Rate of Exchange.

|                   |   |                    |                        |
|-------------------|---|--------------------|------------------------|
|                   |   | 20                 | Shillings Sterling ?   |
| $77\frac{1}{2}$ * | — | 1                  | Oz. Standard.          |
| 12                | — | 11                 | Fine.                  |
| $23\frac{1}{2}$   | — | 24                 | Ducat Standard.        |
| 451               | — | 60                 | Cologne Marks.         |
| 1                 | — | 67                 | Ducats.                |
| 1                 | — | * $103\frac{1}{4}$ | Schillings Banco.      |
| 16                | — | 1                  | Mark Banco.            |
| $77\frac{1}{2}$   | ) | 1043.07            | Fixed Number.          |
|                   |   | <u>13.459</u>      | Do. for 100 Schill.    |
|                   |   | .404               | — 3 —                  |
|                   |   | .034               | — $\frac{1}{2}$ —      |
|                   |   | <u>Mks 13.897</u>  | = Mks 13 14.35 Schill. |

---

### Fixed Numbers for Prices per Oz.

---

| s  | d               |        |
|----|-----------------|--------|
| 77 | 6               | 13.459 |
| -  | 9               | -.416  |
| -  | $10\frac{1}{2}$ | -.394  |
| 78 | -               | -.373  |
| -  | 3               | -.330  |
| -  | 6               | -.287  |
| -  | 9               | -.245  |

## HAMBURG.

Doubloons in London are 74 s 6 d per Oz.; in Hamburg, as Bar Gold, 103½ Schillings Banco per Ducat; required the arbitrated Rate of Exchange.

|        |   |        |                      |
|--------|---|--------|----------------------|
|        |   | 20     | Shillings ?          |
| 74½ *  | — | 1      | Oz.                  |
| 451    | — | 60     | Cologne Marks.       |
| 24     | — | 20 9½  | Carats and Gr. Fine. |
| 23½    | — | 24     | Ducat Standard.      |
| Mark 1 | — | 67     | Ducats.              |
| 1      | — | * 103½ | Schillings.          |
| 16     | — | 1      | Mark Banco.          |

74½ ) 98677 Fixed Number.

13.245 for 100 Sch.

.397 — 3 —

.033 — ¼ —

Mks 13.675 = Mks 13 10.8 Sch.

Fixed Numbers for Prices per Oz. and 100 Schill. per Ducat.

| s d |              | s d |              |
|-----|--------------|-----|--------------|
| 73  | - . . 13.517 | 76  | - . . 12.984 |
| - 3 | . . . . .471 | - 3 | . . . . .941 |
| - 6 | . . . . .425 | - 6 | . . . . .899 |
| - 9 | . . . . .380 | - 9 | . . . . .857 |
| 74  | - . . . .335 | 77  | - . . . .815 |
| - 3 | . . . . .290 | - 3 | . . . . .773 |
| - 6 | . . . . .245 | - 6 | . . . . .732 |
| - 9 | . . . . .201 | - 9 | . . . . .692 |
| 75  | - . . . .157 | 78  | - . . . .651 |
| - 3 | . . . . .113 | - 3 | . . . . .610 |
| - 6 | . . . . .070 | - 6 | . . . . .570 |
| - 9 | . . . . .027 | - 9 | . . . . .530 |

Table of Parts for Purities from 20 Carats  $7\frac{1}{2}$  Grs to  $9\frac{1}{2}$  Grs.

| Subt.<br>for       | 73 s | 74 s | 75 s | 76 s | 77 s | 78 s |
|--------------------|------|------|------|------|------|------|
| $7\frac{1}{2}$ Grs | 122  | 120  | 119  | 117  | 115  | 114  |
| $-\frac{3}{4}$     | 108  | 107  | 105  | 104  | 103  | 101  |
| 8-                 | 95   | 94   | 92   | 91   | 90   | 89   |
| $-\frac{1}{2}$     | 81   | 80   | 79   | 78   | 77   | 76   |
| $-\frac{1}{4}$     | 68   | 67   | 66   | 65   | 64   | 63   |
| $-\frac{3}{8}$     | 54   | 53   | 53   | 52   | 51   | 51   |
| 9-                 | 41   | 40   | 40   | 39   | 39   | 38   |
| $-\frac{1}{4}$     | 27   | 26   | 26   | 26   | 26   | 25   |
| $-\frac{1}{8}$     | 13   | 13   | 13   | 13   | 13   | 13   |

## EXAMPLE

Of the application of this Table.

Columbian Doubloons, reported 20 Carats  $8\frac{3}{4}$  Grs Fine.  
 London, 73 s 10 d per Oz. — Hamburg,  $103\frac{1}{4}$  Sch. per Ducat.  
 By the preceding Table

73 s 10 d . . 20 C.  $9\frac{3}{4}$  Gr. . Mks 13.365

By the above

73 s 10 d . . 20 C.  $8\frac{3}{4}$  Gr. . . . 53

100 Sch. . . . 13.312

3 - . . . .399

$\frac{1}{4}$  - . . . .83

Mks 13 11.9 Sch. = Mks 13.744

The Equation for the above gives the same result.

|                 |   |                                |
|-----------------|---|--------------------------------|
|                 |   | 20 Shillings ?                 |
| 73 s 10 d *     | — | 1 Oz.                          |
| 451             | — | 60 Cologne Marks.              |
| $23\frac{1}{2}$ | — | * 20 $8\frac{3}{4}$ Fine..     |
| 1               | — | 67 Ducats.                     |
| 1               | — | * $103\frac{1}{4}$ Schillings. |
| 16              | — | 1 Mark.                        |

Result, Marks 13 11.9 Sch.

**HAMBURG.**

Dollar Silver in London is  $57\frac{1}{2}$  d per Oz. ; in Hamburg, 27 Mks  $11\frac{1}{2}$  Sch. per Hamburg or Cologne Mark Fine ; required the arbitrated Rate of Exchange.

|                   |   |                      |                   |
|-------------------|---|----------------------|-------------------|
|                   |   | 240                  | Pence ?           |
| $57\frac{1}{2}$ * | — | 1                    | Oz.               |
| 451               | — | 60                   | Cologne Marks.    |
| 16                | — | 14 5                 | Loths and Grains. |
| 1                 | — | * 27 $11\frac{1}{2}$ | Mks and Sch.      |
| $57\frac{1}{2}$   | ) | 2849224              | Fixed Number.     |

|                 |                           |
|-----------------|---------------------------|
| 495517          | Do. for $57\frac{1}{2}$ d |
| $27\frac{1}{2}$ |                           |
| 13 10.03        | Do. for 27 Mks 8 Sch.     |
| 1.49            | — 3 Sch.                  |
| .25             | — $\frac{1}{2}$ Sch.      |

Mks 13 11.77 Sch.

Fixed Numbers or Rates of Exchange, for Prices per Oz. ; for 14 Loths 5 Grs ; and for 27 Mks 8 Sch.

| d               | Mk | Sc    | d               | Mk | Sc   |
|-----------------|----|-------|-----------------|----|------|
| $56\frac{1}{2}$ | 13 | 13.88 | $57\frac{1}{2}$ | 13 | 9.08 |
| - $\frac{5}{8}$ | -  | 13.40 | - $\frac{7}{8}$ | -  | 8.61 |
| - $\frac{3}{4}$ | -  | 12.91 | 58 -            | -  | 8.15 |
| - $\frac{7}{8}$ | -  | 12.42 | - $\frac{1}{8}$ | -  | 7.68 |
| 57 -            | -  | 11.94 | - $\frac{1}{4}$ | -  | 7.22 |
| - $\frac{1}{8}$ | -  | 11.46 | - $\frac{3}{8}$ | -  | 6.76 |
| - $\frac{1}{4}$ | -  | 10.98 | - $\frac{1}{2}$ | -  | 6.30 |
| - $\frac{3}{8}$ | -  | 10.50 | - $\frac{5}{8}$ | -  | 5.84 |
| - $\frac{1}{2}$ | -  | 10.03 | - $\frac{3}{4}$ | -  | 5.39 |
| - $\frac{5}{8}$ | -  | 9.55  | - $\frac{7}{8}$ | -  | 4.94 |

## Average Parts for

| d               | -4 Sc. | 3 Sc. | 2 Sc. | 1 Sc. |
|-----------------|--------|-------|-------|-------|
| $56\frac{1}{2}$ | - 4.02 | 1.51  | 1.01  | 0.50  |
| 57-             | - 2.00 | 1.50  | 1.00  | 0.50  |
| $57\frac{1}{2}$ | - 1.98 | 1.49  | 0.99  | 0.49  |
| 58-             | - 1.96 | 1.47  | 0.98  | 0.49  |
| $58\frac{1}{2}$ | - 1.94 | 1.46  | 0.98  | 0.49  |



## DOLLAR SILVER AT HAMBURG.

Table of Parts for Purities from 14 Loths 3 Grs to 7 Grs.

| Subt.<br>for | d<br>56½ | d<br>57 | d<br>57½ | d<br>58 | d<br>58½ | Add<br>for |
|--------------|----------|---------|----------|---------|----------|------------|
| 3 Grs.       | 1.73     | 1.71    | 1.70     | 1.68    | 1.67     | Grs. 7     |
| 3½           | 1.29     | 1.29    | 1.27     | 1.26    | 1.25     | 6½         |
| 4            | 0.86     | 0.86    | 0.85     | 0.84    | 0.83     | 6          |
| 4½           | 0.43     | 0.43    | 0.42     | 0.42    | 0.42     | 5½         |

## EXAMPLE

Of the application of this Table.

Dollar Silver, reported 14 Loths 3½ Grains Fine.

Price in London, 57½ d — Hamburg, Mks 27 11 Sch.

By the preceding Table

14 Loths 5 Grs and 57½ d . . Mks 13 10.50 Sch.

3½ Grs as above . . . . 1.27 subt.

For 27 Mks 8 Sch. . 13 9.23

Do. . (page 188) . 3 Sch. . 1.49 add.

Marks 13 10.72 Sch.

The Equation for the above gives the following result :

240 Pence ?  
 57½ \* — 1 Oz. Dollar Silver.  
 451 — 60 Cologne Marks.  
 Loths 16 — \* 14 3½ Loths and Grs fine.  
 Col. Mk. 1 — \* 27 11 Mks and Sch.  
 Result, Mks 13 10.71 Sch.

**HAMBURG.**

Bar Silver in London is  $59\frac{1}{2}$  d per Oz. Standard; in Hamburg, 27 Mks 11 Sch. per Hamburg or Cologne Mark Fine; required the arbitrated Rate of Exchange.

|                   |   |                                   |                                 |
|-------------------|---|-----------------------------------|---------------------------------|
|                   |   | 240                               | Pence ?                         |
| $59\frac{1}{2}$ * | — | 1                                 | Oz. Standard.                   |
| $65\frac{1}{11}$  | — | 8                                 | Cologne Marks Fine.             |
| 8                 | — | * 27 11                           | Mks and Sch.                    |
|                   |   | 295343                            | Fixed Number.                   |
|                   |   | <u>27<math>\frac{1}{2}</math></u> |                                 |
| $59\frac{1}{2}$ ) |   | 812195                            | Do. for 27 $\frac{1}{2}$ Marks. |
|                   |   | <u>13 10.41</u>                   | — $59\frac{1}{2}$ d             |
|                   |   | 1.49                              | — 3 Sch.                        |
|                   |   | <u>Mks 13 11.90</u>               | Sch.                            |

Fixed Numbers or Rates of Exchange,  
for Prices per Oz. and for 27 Mks 8 Sch.

| d               |       | Mks | Sc.   | d               |       | Mks | Sc.  |
|-----------------|-------|-----|-------|-----------------|-------|-----|------|
| 59 -            | . . . | 13  | 12.26 | 60 -            | . . . | 13  | 8.59 |
| - $\frac{1}{8}$ | . . . | -   | 11.79 | - $\frac{1}{8}$ | . . . | -   | 8.14 |
| - $\frac{1}{4}$ | . . . | -   | 11.33 | - $\frac{1}{4}$ | . . . | -   | 7.69 |
| - $\frac{3}{8}$ | . . . | -   | 10.87 | - $\frac{3}{8}$ | . . . | -   | 7.24 |
| - $\frac{1}{2}$ | . . . | -   | 10.41 | - $\frac{1}{2}$ | . . . | -   | 6.79 |
| - $\frac{5}{8}$ | . . . | -   | 9.95  | - $\frac{5}{8}$ | . . . | -   | 6.35 |
| - $\frac{3}{4}$ | . . . | -   | 9.49  | - $\frac{3}{4}$ | . . . | -   | 5.91 |
| - $\frac{7}{8}$ | . . . | -   | 9.04  | - $\frac{7}{8}$ | . . . | -   | 5.47 |

## Average Parts for

| at                 | 4 Sc. | 3 Sc. | 2 Sc. | 1 Sc. | $\frac{1}{2}$ Sc. | $\frac{1}{4}$ Sc. |
|--------------------|-------|-------|-------|-------|-------------------|-------------------|
| 59 d —             | 2.00  | 1.50  | 1.00  | 0.50  | 0.25              | 0.12              |
| 59 $\frac{1}{2}$ — | 1.99  | 1.49  | 0.99  | 0.50  | 0.25              | 0.12              |
| 60 —               | 1.97  | 1.48  | 0.98  | 0.49  | 0.25              | 0.12              |
| 60 $\frac{1}{2}$ — | 1.95  | 1.46  | 0.97  | 0.48  | 0.24              | 0.12              |

## FRANKFORT.

The Frankfort Standard of the Cologne Mark Weight is reckoned to weigh 3611 Grains Troy, 159½ Marks being considered equal to 100 lb English Troy.

The Prices of Bar Gold and Silver per Cologne or Frankfort Mark, are reckoned in Wechselzahlung or Exchange-Reckoning; and those of Dollars and other Coins in Reichsgeld or 24 Guldenfuss, the relative values of these monies being estimated, by reckoning 46 Rixdollars in W. Z. equal to 55 Rixdollars in 24 G. F.

The Rate of Exchange with London is in Batzen W. Z.—15 Batzen or 60 Kreuzers make 1 Florin, and 90 Batzen, 4 Rixdollars.

The variation of 1½ Batzen in the rate, is reckoned 1 per Cent; 75-100 ths of a Batzen ½ per Cent, &c.—10 ths of a Batzen are therefore to be reckoned as 15 ths per Cent; but when the number is small they may be reckoned as 16 ths per Cent, allowing for the excess according to the 100 ths; thus the difference between 150 and 150.92 would be called 10-16 ths or 5-8 ths per Cent; because 75 out of 92-100 ths give 8-16 ths, and the remainder 17-100 ths would be called, in general, 2-16 ths. The difference per Cent may also be valued by the following Table.

### At 1½ Batzen as 1 per Cent.

| Batzen. 1.41-100 ths are $\frac{15}{16}$ per Ct. |   |   |                 | 75-100 ths are $\frac{1}{2}$ per Ct. |    |   |                |
|--------------------------------------------------|---|---|-----------------|--------------------------------------|----|---|----------------|
| 1.31                                             | - | . | $\frac{7}{8}$   | -                                    | 66 | - | $\frac{7}{16}$ |
| 1.22                                             | - | . | $\frac{11}{16}$ | -                                    | 56 | - | $\frac{3}{8}$  |
| 1.12                                             | - | . | $\frac{3}{4}$   | -                                    | 47 | - | $\frac{5}{16}$ |
| 1.03                                             | - | . | $\frac{11}{16}$ | -                                    | 37 | - | $\frac{1}{4}$  |
| 0.94                                             | - | . | $\frac{5}{8}$   | -                                    | 28 | - | $\frac{3}{16}$ |
| 0.84                                             | - | . | $\frac{9}{16}$  | -                                    | 19 | - | $\frac{1}{8}$  |

9-100 ths are  $\frac{1}{16}$  per Cent.

## FRANKFORT.

Bar Gold in London is 77 s 6 d per Oz. Standard ; in Frankfort, 320 Florins W. Z. per Mark Fine ; required the arbitrated Rate of Exchange.

|                                       |   |        |                  |
|---------------------------------------|---|--------|------------------|
|                                       |   | 20     | Shillings ?      |
| 77½ *                                 | — | 1      | Oz. Standard     |
| 12                                    | — | 11     | Fine             |
| 1200                                  | — | 159½   | Marks            |
| 1                                     | — | * 320  | Florins          |
| 1                                     | — | 15     | Batzen           |
|                                       |   |        |                  |
| 77½                                   | ) | 365521 | Fixed Number     |
| <hr/>                                 |   |        |                  |
|                                       |   | 47164  | do. for 77 s 6 d |
| Multiply by                           |   | 320    |                  |
| <hr/>                                 |   |        |                  |
| Batzen                                |   | 150.92 |                  |
| <hr/>                                 |   |        |                  |
| <hr style="border-top: 1px dashed;"/> |   |        |                  |

Fixed Numbers for Prices per Oz.

|    |     |   |   |   |       |
|----|-----|---|---|---|-------|
| s  | d   |   |   |   |       |
| 77 | 6   | . | . | . | 47164 |
| -  | 9   | . | . | . | - 012 |
| -  | 10½ | . | . | . | 46937 |
| 78 | -   | . | . | . | - 862 |
| -  | 3   | . | . | . | - 712 |
| -  | 6   | . | . | . | - 563 |
| -  | 9   | . | . | . | - 415 |

## FRANKFORT.

---

Bar Silver in London is  $59\frac{1}{2}$  d per Oz. Standard ; in Frankfort Florins 20 25 Kr. W. Z. per Mark Fine ; required the arbitrated Rate of Exchange.

|                   |   |                  |                  |
|-------------------|---|------------------|------------------|
|                   |   | 240              | Pence ?          |
| $59\frac{1}{2}$ * | — | 1                | Oz. Standard.    |
| 40                | — | 37               | Fine.            |
| 1200              | — | $159\frac{1}{2}$ | Marks.           |
| 1                 | — | * 20 25          | Flor. and Kreuz. |
| 1                 | — | 15               | Batzen.          |

$59\frac{1}{2}$       )      442613      Fixed Number.

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74389      Do. for  $59\frac{1}{2}$  d  
20

---

|                |   |   |        |                 |
|----------------|---|---|--------|-----------------|
| $\frac{1}{80}$ | - | - | 148.78 | for 20 Florins. |
| $\frac{1}{4}$  | - | - | 2.48   | — 20 Kreuz.     |
|                |   |   | .62    | — 5 Kreuz.      |

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Batzen      151.88

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Fixed Numbers for Prices per Oz.

d			d		
59 -	.	.	60 -	.	.
		75019			73769
- $\frac{1}{8}$.	74861	- $\frac{1}{8}$.	- 616
- $\frac{1}{4}$.	- 703	- $\frac{1}{4}$.	- 463
- $\frac{3}{8}$	.	- 545	- $\frac{3}{8}$	.	- 311
- $\frac{1}{2}$	.	- 389	- $\frac{1}{2}$	.	- 159
- $\frac{5}{8}$	.	- 233	- $\frac{5}{8}$	.	- 008
- $\frac{3}{4}$	.	- 078	- $\frac{3}{4}$	.	72858
- $\frac{7}{8}$	.	73923	- $\frac{7}{8}$	.	- 709

FRANKFORT.

Dollars in London are $57\frac{1}{2}$ d per Oz. ; in Frankfort, Flor. 2 $28\frac{1}{2}$ Kr. in 24 G. F. each ; required the arbitrated Rate of Exchange.

		240	Pence ?
$57\frac{1}{2}$ *	—	1	Oz.
866	—	1000	Dollars.
1	—	* 2 $28\frac{1}{2}$	Fl. and Kr. in 24 G. F.
in 24 G. F. 55	—	46	Flor. in W. Z.
1	—	15	Batzen.
$57\frac{1}{2}$	)	34768	Fixed Number.
		60466	Do. for $57\frac{1}{2}$ d
		2	
$\frac{1}{2}$	- -	120.932	for 2 Florins.
$\frac{1}{4}$	- -	24.186	— 24 Kreuz.
$\frac{1}{8}$	- -	4.031	— 4 —
		.504	— $\frac{1}{2}$ —
		Batzen	149.65

Fixed Numbers for Prices per Oz.

d		d	
56 $\frac{1}{2}$	. . .	57 $\frac{1}{2}$	. . .
- $\frac{1}{8}$	. . .	- $\frac{1}{8}$	. . .
- $\frac{1}{4}$	. . .	58 -	. . .
- $\frac{1}{8}$	. . .	- $\frac{1}{8}$	. . .
57 -	. . .	- $\frac{1}{4}$	. . .
- $\frac{1}{8}$	. . .	- $\frac{1}{8}$	. . .
- $\frac{1}{4}$	. . .	- $\frac{1}{4}$	. . .
- $\frac{1}{8}$	. . .	- $\frac{1}{8}$	. . .
- $\frac{1}{2}$	. . .	- $\frac{1}{2}$	. . .
- $\frac{3}{4}$	. . .	- $\frac{3}{4}$	. . .
- $\frac{1}{8}$	. . .	- $\frac{1}{8}$	. . .

BERLIN, ST. PETERSBURG, NAPLES, AND LISBON.

BERLIN.—The fineness of Gold is expressed in Carats and Grains, and of Silver in Loths and Grains, as at Hamburg.

The Prices of both Metals are in Prussian Dollars per Mark Fine,

The weight of the New Prussian Mark is $3608\frac{3}{4}$ Grains Troy.

PETERSBURG.—The fineness of Gold and Silver is expressed in Solotnicks and Dolis.—96 Solotnicks make 1 Pound, and 96 Dolis, 1 Solotnick.

The Price of fine Gold is fixed at 355 Silver Rubles per Solotnick, and of fine Silver at $22\frac{3}{4}$ Silver Rubles per Pound; the variations in the Price of each, are made by the rate of exchange for the Banco Ruble against the Silver Ruble;—as at $372\frac{1}{2}$ Copecs in Paper for 1 Silver Ruble.

The Weight of the Russian Pound is 6318 $\frac{1}{2}$ Grains Troy.

NAPLES.—The fineness of Gold and Silver is decimally expressed.

The Price of fine Gold is expressed either in Ducats and Grani per Oz. or in Grani per Denaro, reckoning 24 Denari to 1 Oz.

The Price of Silver of the Standard of 10-12 ths fine, is usually in Ducats and Grani per lb of 12 Oz.

The Weight of the Neapolitan Ounce of 30 Trapesi, or 600 Acini, is $412\frac{1}{2}$ Grains Troy, and the Weight of the Neapolitan Pound of 12 Oz. is 4950 Grains Troy, hence for Gold,

16 Neap. Oz. Fine	=	15 Oz. of British Standard,
or 1000 — —	=	$937\frac{1}{2}$ — —

LISBON.—The assay Mark is divided into 24 Quilates or Carats, each of 4 Grains for Gold; or into 12 Dinheiros, each of 24 Grains for Silver.

The fixed price of Gold 22 Carats fine, is 96 Milreis in Metal per Mark, and of Silver 11 Dinheiros fine, 6 Milreis in Metal per Mark, the variations upon each being made by a premium per Cent.

**FORMULÆ FOR ARBITRATED RATES OF EXCHANGE
FROM PRICES OF BAR GOLD.**

BERLIN.

London — 77 s 6 d

Berlin — 218½ Dollars

20 Shill. ?

77½ * — 1 Oz. St.

12 — 11 Fine

1 — 480 Grains

3608½ — 1 Mark

1 — * 218½ Dollars

Fixed Number 243851

Result, Doll. 6 26.4 S. G
per £ Sterling.**NAPLES.**

London — 77 s 6 d

Naples — 91 Grani

20 Shill. ?

77½ * — 1 Oz.

937½ — 1000 Oz. N. St.

1 — 24 Denari

1 — * 91 Grani

Fixed Number 512

Result, Ducats 6 01.1 Gr.
per £ Sterling.**PETERSBURG.**

London — 77 s 6 d

Petersb. — 372½ Copecs

1 Bo. R?

3.72½ * — 1 Sil. R.

355 — 100 Sol. F.

96 — 1 lb. R.

1 — 6318½ Grs.

11 — 12 Stand.

480 — 1 Oz.

1 — * 930 Pence

Fixed Number 421368

Result, 10.52 Pence
per Ruble.**LISBON.**

London — 77 s 6 d

Lisbon { 24 per Ct Prem.
22 per Ct Agio

1000 R. Legal?

100 — * 89 Metal

124 * — 100 With Pr.

96000 — 1 Mark St.

1 — 3541½ Grains

480 — 1 Oz.

1 — * 930 Pence

Fixed Number 768555

Result, 51.3 Pence
per Milreis.

**FORMULÆ FOR ARBITRATED RATES OF EXCHANGE
FROM PRICES OF BAR SILVER.**

BERLIN.

London — $59\frac{1}{2}$ d
 Berlin — $14\frac{3}{10}$ Dollars

240 Pence ?
 $59\frac{1}{2}$ * — 1 Oz. St.
 40 — 37 Fine
 1 — 480 Grains
 $3608\frac{3}{4}$ — 1 Mark
 1 — * 14.3 Dollars

Fixed Number 295282

Result, Doll. 7 2.9 S. G.
 per £ Sterling.

NAPLES.

London — $59\frac{1}{2}$ d
 Naples — 13.87 Ducats.

240 Pence ?
 $59\frac{1}{2}$ * — 1 Oz. St.
 40 — 37 Fine
 10 — 12 N. St.
 1 — 480 Grains
 4950 — 1 lb. N.
 1 — * 13.87 Ducats.

Fixed Number 258327

Result, Ducats 6 02.1 Gr.
 per £ Sterling.

PETERSBURG.

London — $59\frac{1}{2}$ d
 Petersb. — $372\frac{1}{2}$ Copecs.

1 Bo Rub. ?
 $3.72\frac{1}{2}$ * — 1 Silv. Rub.
 $22\frac{3}{4}$ — 1 lb. fine.
 1 — $6318\frac{1}{2}$ Grains
 37 — 40 Stand.
 480 — 1 Oz.
 1 — * $59\frac{1}{2}$ Pence

Fixed Number 825532

Result, 10 Pence per Ruble
 less 1 per Mil.

LISBON.

London — $59\frac{1}{2}$ d
 Lisbon { 20 per Ct. Prem.
 { 22 per Ct. Agio.

1000 Reis L ?
 100 — * 89 Reis M.
 120 * — 100 With Pr.
 6000 — 1 Mark St.
 12 — 11 Fine
 37 — 40 Stand.
 1 — $3541\frac{1}{2}$ Grains
 480 — 1 Oz.
 1 — * $59\frac{1}{2}$ Pence

Fixed Number 12186

Result, Pence 53.77 per
 Milreis.

EXAMPLES

Of finding an arbitrated par of Exchange by the preceding Tables.

EXAMPLE 1.

BAR GOLD FROM LONDON TO PARIS.

The price of Bar Gold in London being 77 9, and in Paris 73½ Premium, it is required to find the net arbitrated Par of Exchange, allowing $\frac{5}{8}$ per Cent for extra charges; and the rate of Exchange for Bills in return being 25 12½, it is required to find the Profit or Loss per Cent, allowing $\frac{1}{10}$ per Cent for Brokerage and $\frac{1}{8}$ per Cent for loss of Interest.

The fixed Number page 172

for 77 s 9 d is	- - - -	25.186
7 per Mille	- - - -	.176
$\frac{1}{2}$ — —	- - - -	12
$\frac{1}{4}$ — —	- - - -	6
Full Rate	- - - -	25.380
$\frac{5}{8}$ per Cent	- - - -	.158
Net Rate	- - - -	25.222
$\frac{1}{10}$ — —	- - - -	25
$\frac{1}{8}$ — —	- - - -	31
Net Proceeds	- - - -	25.166
Rate of the Bill	- - - -	25.125
Profit	- - - -	Millièmes 41

41 Millièmes on 25.125 Francs are nearly 1-6 th per Cent.

EXAMPLE 2.

BAR GOLD FROM PARIS TO LONDON.

The price of Bar Gold in London being 77 10½ per Oz., and in Paris 7 per Mille Premium, it is required to find the net arbitrated Rate of Exchange, charging ⅛ per Cent for extra expenses; and if the amount is drawn for from Paris in short Bills at 25.50 Francs, what is the Profit or Loss per Cent, charging 1/10 and 1/8 per Cent for Brokerages on Bills in Paris and Sales in London.

Fixed No. page 172, for 77 s 10½ d	- -	25.146
7 per Mille	- -	.176
Net Rate	- - - - -	25.322
⅛ per Cent	- -	.158
Full Rate	- - - - -	25.480
1/10 per Cent	- -	25
1/8	- - - - -	31
Full Amount	- - - - -	25.536
Rate of Exchange	- - - - -	25.50
Loss	- - - - -	Millièmes 36

36 Millièmes on 25.50 Francs are nearly 1/20 per Cent.

N. B. When the Rate of Exchange is in Sterling, as with Petersburg, the application of the charges is the reverse of what it is with the rate in Foreign money; they are then added for the export and deducted for the import.

With respect to the Interest it is to be observed, that when the Bills are drawn from abroad, for Bullion imported into this Country, at a distant date, as 2 or 3 months, there will be a profit to allow for, or to deduct from the full amount, equal to the interest for the estimated time between the sale of the Bullion, and the day of the Bills becoming due; thus sometimes when the result would be, as above, a loss, the advantage that is made of the money during this time repays it and leaves a profit.

EXERCISES

ON ARBITRATED PARS OF EXCHANGE,

AND THE

PROFIT AND LOSS ON BULLION OPERATIONS.

Ex. 1. From the following prices of Gold and Silver in London and Paris, it is required to find the net arbitrated Pars of Exchange, allowing all the extra charges to be $\frac{1}{2}$ per Cent upon Gold, and $\frac{5}{8}$ per Cent upon Silver; and the price of short Bills in return being Francs 25.10, it is required to find the Profit or Loss per Cent, allowing $\frac{1}{10}$ per Cent for Brokerage, and $\frac{1}{8}$ per Cent for loss of interest.

PRICES.

	LONDON.	PARIS.
Bar Gold	77 s 10 $\frac{1}{2}$ d per Oz. St.	8 $\frac{1}{2}$ per Mille pr.
Bar Silver	59 $\frac{7}{8}$ d per Oz. St.	5 per Mille pr.
Doubloons	75 s 6 d per Oz.	Fr. 83.20 each.
Dollars	57 $\frac{3}{4}$ d per Oz.	895 Fine—5 $\frac{1}{2}$ per M. pr.

Ex. 2. From the following prices of Gold and Silver in London and Amsterdam, it is required to find the net arbitrated Pars of Exchange; and the Rate of Exchange for short Bills in return being Flor. 11.95, it is required to find the Profit or Loss per Cent, allowing the extra charges to be as before; viz. $\frac{1}{2}$ per Cent upon Gold, $\frac{5}{8}$ per Cent upon Silver, and $\frac{1}{10}$ for Brokerage, and $\frac{1}{8}$ per Cent for loss of interest upon the Bills.

PRICES.

	LONDON.	AMSTERDAM.
Bar Gold	77 s 10½ d per Oz. St.	14½ per Ct. prem.
Bar Silver	59½ d per Oz. St.	Fl. 104.10 per Pond.
Doubloons	75 s 6 d per Oz.	865 Fine—14½ per Ct. pr.
Dollars	57½ d per Oz.	Flor. 2.55 each.

Ex. 3. From the following prices of Gold and Silver at Hamburg, it is required to find the net arbitrated Par of Exchange, allowing for all extra charges ½ per Cent upon Gold, and ⅝ per Cent upon Silver; and the Rate of Exchange for Bills in return being Mks 13 8½ Sc. it is required to find the Profit or Loss per Cent, allowing ⅓ per Cent for Brokerage and ⅓ per Cent for loss of interest.

PRICES.

	LONDON.	HAMBURG.
Bar Gold	77 s 10½ d per Oz. St.	103½ Sch. per Ducat.
Bar Silver	59½ d per Oz. St.	Mks 27 11½ Sc. per Mk.
Doubloons	75 s 6 d per Oz.	20 C. 9½ Gr.—103½ per Duc.
Dollars	57½ d per Oz.	14 L. 5½ Gr.—27 12 per Mk.

Ex. 4. From the following prices of Gold and Silver at Frankfort, it is required to find the net arbitrated Pars of Exchange, allowing for extra charges on Gold ⅝ per Cent, and on Silver ¾ per Cent; and the Rate of Exchange for Bills in return being 148½ Batzen per £ Sterling, it is required to find the Profit or Loss per Cent, allowing ⅓ per Cent for Brokerage and ¾ per Cent for loss of interest.

PRICES.

	LONDON.	FRANKFORT.
Bar Gold	77 s 10½ d per Oz. St.	325 Flor. W. Z. per Mk.
Bar Silver	59½ d per Oz. St.	Flor. 20 32½ K. W. Z. per Mk.
Dollars	57½ d per Oz.	Flor. 2 31 K. in 24 G.F. each.

Ex. 5. When in London Bar Gold is 77 s 10½ per Oz. Standard, and Bar Silver is 59⅞ d per Oz. Standard, and in Berlin Fine Gold is 217⅞ Prussian Dollars per Mark, and fine Silver is Dollars 14 5 S. G. per Mark, it is required to find the arbitrated Pars of Exchange and the Profit or Loss per Cent, the Rate of Exchange for Bills in return being Dollars 6 21½ per £ Sterling, and 2 per Cent being allowed for Charges, Interest, &c.

6. When Bar Gold is 77 s 10½ d per Oz. Standard, and Bar Silver is 59⅞ d per Oz. Standard, in London, and the price of the Silver Ruble is 371 Copecs in St. Petersburg, it is required to find the arbitrated Pars of Exchange and the Profit or Loss per Cent, the Rate of Exchange for Bills in return being 11⅞ Pence per Banco Ruble, and 2½ per Cent being allowed for Charges, Interest, &c.

7. When in London Bar Gold is 77 s 10½ d per Oz. Standard, and Bar Silver is 59⅞ d per Oz. Standard, and in Naples fine Gold is 89½ Grani per Dinaro, and Silver 5-6ths fine is Ducats 14 10 Grani per Neapolitan Pound, it is required to find the arbitrated Pars of Exchange and the Profit or Loss per Cent, the Rate of Exchange for Bills in return being 570 Grani per £ Sterling, and 2½ per Cent being allowed for Charges, Interest, &c.

8. When Bar Gold in London is 77 s 10½ d per Oz. Standard, and Bar Silver is 59⅞ d per Oz., also when Bar Gold in Lisbon bears a premium of 28 per Cent, and Bar Silver a premium of 26 per Cent, the Agio on Paper being 22½ per Cent, it is required to find the arbitrated Pars of Exchange and the Profit or Loss per Cent, the Rate of Exchange for Bills in return being 49½ Pence per Milreis, and 1½ per Cent being allowed for Charges, Interest, &c.

PRODUCTS.

Ex. 1.	Bar Gold	Bar Silver	Doubloons	Dollars
Full Rate Frs.	25 35.9	25 36.6	25 39.0	25 45.2
Net Rate —	25 23.3	25 20.9	25 26.4	25 29.4
Difference	7.7	5.3	10.8	13.8
Per Centage	$\frac{3}{10}$ Pr	$\frac{1}{3}$ Pr	$\frac{2}{3}$ Pr	$\frac{1}{2}$ Pr
2.				
Full Rate Flor.	12 09.2	12 00.3	11 77.0	12 23.7
Net Rate —	12 03.2	11 92.8	11 71.2	12 16.1
Difference	5.5	04.7	26.3	18.4
Per Centage	$\frac{1}{4}$ Pr	$\frac{3}{8}$ Loss	$2\frac{1}{6}$ Loss	$1\frac{1}{2}$ Pr
3.				
Full Rate Mks	13 13.77	13 10.89	13 8.00	13 11.47
Net Rate —	13 12.67	13 9.54	13 6.93	13 10.12
Difference	3.44	0.31	2.29	0.89
Per Centage	$1\frac{1}{2}$ Pr	$\frac{1}{4}$ Pr	1 Loss	$\frac{3}{8}$ Pr
4.				
Full Rate Batz.	152.54	151.85	—	151.51
Net Rate —	151.59	150.71	—	150.39
Difference	1.81	.93	—	.60
Per Centage	$1\frac{1}{3}$ Pr	$\frac{5}{8}$ Pr	—	$\frac{3}{8}$ Pr
5.				
Full Rate Doll.	6 23.9	6 29.5	—	—
Difference	1.3	4.2	—	—
Per Centage	$\frac{7}{10}$ Loss	$2\frac{1}{10}$ Pr	—	—
6.				
Net Rate Pence	10.613	10.095	—	—
Difference	.184	.715	—	—
Per Centage	$1\frac{7}{10}$ Pr	$6\frac{9}{10}$ Pr	—	—
7.				
Full Rate Duc.	5 88.4	6 08.3	—	—
Difference	3.7	23.1	—	—
Per Centage	$\frac{1}{2}$ Pr	4. Pr	—	—
8.				
Net Rate Pence	49.79	51.39	—	—
Difference	.91	2.54	—	—
Per Centage	$1\frac{1}{2}$ Loss	$5\frac{1}{10}$ Loss	—	—

ARBITRATED COMPOUND

PARS OF EXCHANGE.

Compound Bullion Operations are classed under two heads—Those between two places on account of a third place, as between Paris and Amsterdam on account of London ; and those between a first place of operation and a second place, through the medium of a third place ; as between London and Hamburg through Amsterdam.

The first class of operations requires the buying price at the place from which the Bullion is sent, and the selling price at the place to which it is sent, besides the Rate of Exchange at which it is drawn for from the first place ; as for Gold sent from Hamburg to Petersburg, and either drawn for upon London from Hamburg, or what produces the same effect, remitted for from London to Hamburg, in which it is requisite to have the buying price at Hamburg, the selling price at St. Petersburg, and the Rate of Exchange between Hamburg and London. The Pars of Exchange produced by these operations, which are of very frequent occurrence, may for distinction sake be called *Cross Pars*, although the calculations are not precisely similar to those which are styled Cross Exchanges.

The second class of operations is limited to the export of Bullion from one place, to be coined at another place, and thence sent for sale to a third place.—In these operations there are required, the buying price at the first place, as London ; the mintage returns at the second place, as Amsterdam, or rather Utrecht ; and the selling price at the third place, as Hamburg. To distinguish the Pars produced by these transactions we may term them *Compound Pars*.

For our elucidation of these Calculations we have taken only Bar Gold and Ducats into consideration ; and the places concerned in the Operations we have limited to London, as the place on account of which the Operations are made, and Paris, Amsterdam, Hamburg, Frankfort, and Petersburg, as the places through or by which they are made.

Thus for Cross Pars we have taken,

- 1 London and Amsterdam through Paris in Bar Gold
- 2 London and Hamburg through Amsterdam in Ducats
- 3 London and Petersburg through Hamburg in Bar Gold
- 4 London and Petersburg through Hamburg in Ducats

For Compound Pars we have taken,

- 5 London and Paris through Amsterdam in Ducats
- 6 London and Hamburg Ditto Ditto
- 7 London and Frankfort Ditto Ditto
- 8 London and Petersburg Ditto Ditto

Any explanation that may be required of the rates employed in the following Formulæ, may be found in the introduction to each of the places concerned in the preceding Class of Calculations for finding Simple Arbitrated Pars, as in Page 171, 178, &c., except in the third of these Operations, upon which we may observe, that the relation of the Hamburg and Petersburg Weights is usually reckoned 54½ Solotnicks to 1 Cologne Mark, but it is more exactly as we have rated it, viz. 54.82 Solotnicks to the Hamburg Standard or Banco Mark.

The charges attending these operations are very uncertain ; we have endeavoured to show some of the most usual estimates in the Exercises following these Formulæ.

**FORMULE FOR ARBITRATED CROSS PARS OF EX-
CHANGE FROM PRICES OF GOLD.**

LONDON and AMSTERDAM
through PARIS.

BAR GOLD.

Paris — $5\frac{1}{2}$ per M. pr.
Amsterdam — $14\frac{1}{2}$ per Ct. pr.

Exchange at Paris 25.30

	1	£ ?	
1	—	* 25.30	Flor.
1005 $\frac{3}{4}$ *	—	1000	with p.
3434.44	—	1	K. fine
1	—	1442.60	Flor.
100	—	* 114 $\frac{1}{2}$	Flor.

Fixed Number 420039

Result, 12.07.7 Flor.

LONDON and HAMBURG
through AMSTERDAM.

DUCATS.

Amsterdam — 5.72 Flor.
Hamburg — 105 $\frac{1}{2}$ Schill.

Exchange at Amsterdam 12.10

	1	£ ?	
1	—	* 12.10	Florins.
5.72 *	—	1	Ducat.
1	—	* 105 $\frac{1}{2}$	Sc. Bco.
16	—	1	Mark.

Fixed Number $\frac{1}{16}$

Result, Mks 13 15.16 Sc.

LONDON and PETERSBURG
through HAMBURG.

BAR GOLD.

Hamburg — 108 $\frac{1}{2}$ Schill.
Petersburg — 370 Cop.

Exch. at Hamburg 13 10 $\frac{1}{2}$

	1	Pap. Rub. ?
370 *	—	100 Silver.
355	—	100 Solot. fine.
54.82	—	1 Col. Mk.
23 $\frac{1}{2}$	—	24 Ducat St.
1	—	67 Ducats.
1	—	* 103 $\frac{1}{2}$ Sch.
218 $\frac{1}{2}$ *	—	240 Pence.

Fixed Number 843844

Result, 10.8 Pence.

LONDON and PETERSBURG
through FRANKFORT.

DUCATS.

Frankfort — 5 38 $\frac{1}{2}$ F. & K.
Petersburg — 11 45 Rub.

Exchange at Frankfort 151

	1	Pap. Rub ?
11.45 *	—	1 Ducat.
1	—	* 5 38 $\frac{1}{2}$ Fl. 24 G.F.
55	—	46 W. Z.
Flor. 1	—	15 Batzen.
151 *	—	240 Pence.

Fixed Number 301091

Result, 9.82 Pence.

**FORMULÆ FOR ARBITRATED COMPOUND RATES,
FROM BAR GOLD BOUGHT IN LONDON AND
COINED INTO DUCATS AT UTRECHT.**

**LONDON and PARIS through
AMSTERDAM.**

London — 77 s 6 d per Oz.
Paris — Fr. 11 95 each.

	20	Shill. ?
77½*	— 1	Oz. St.
12	— 11	Fine.
1	— 31.1002	Wigties
1000	— 1442.60	Florins.
5	— 1	Ducat.
1	— * 11.95	Francs.

Fixed Number 164505

Result, 25.36 Francs.

**LONDON and FRANKFORT
through AMSTERDAM.**

London — 77 s 6 d per Oz.
Frankfort — Flor. 5 38½ Kr.

	20	Shill. ?
77½*	— 1	Oz. St.
12	— 11	Fine.
1	— 31.1002	Wigties.
1000	— 1442.60	Florins.
5	— 1	Ducat.
1	— * 5 38½	F. 24 G.F.
55	— 46	W. Z.
Fl. 1	— 15	Batzen.

Fixed Number 206379

Result, 150.23 Batzen.

**LONDON and HAMBURG
through AMSTERDAM.**

London — 77 s 6 d per Oz.
Hamburg — 105½ Sch.

	20	Shill. ?
77½*	— 1	Oz. St.
12	— 11	Fine.
1	— 31.1002	Wigties.
1000	— 1442.60	Florins.
5	— 1	Ducat.
1	— * 105½	Sch. B.
16	— 1	Mark.

Fixed Number 102816

Result, Mks 13 15.93 Sc.

**LONDON and PETERSBURG
through AMSTERDAM.**

London — 77 s 6 d per Oz.
Petersburg — Rub. 11.45 each.

	1	Pap. Rub ?
11.45*	— 1	Ducat.
1	— 5	Flor.
1442.60	— 1000	Wigties.
31.1002	— 1	Oz. Troy.
11	— 12	Stand.
1	— * 980	Pence.

Fixed Number 121576

Result, 9.87 Pence.

EXERCISES ON CROSS AND COMPOUND PARS OF EXCHANGE.

What will be the net arbitrated Pars of Exchange,

Ex. 1. Between London and Amsterdam, from Bar Gold bought in Paris at 6 per Mille, and sold in Amsterdam at $14\frac{1}{2}$ per Cent; the exchange being 25.20, and the charges 1 per Cent ?

Ex. 2. Between London and Hamburg, from Ducats bought in Amsterdam at $5.62\frac{1}{2}$, and sold in Hamburg at $105\frac{3}{4}$; the exchange being 12.05, and the charges $\frac{7}{8}$ per Cent ?

Ex. 3. Between London and St. Petersburg, from Bar Gold bought in Hamburg at $102\frac{3}{4}$, and sold in St. Petersburg at $371\frac{1}{2}$; the exchange being $13\ 11\frac{1}{4}$, and the charges $1\frac{1}{4}$ per Cent ?

Ex. 4. Between London and St. Petersburg, from Ducats bought in Frankfort at 5 35, and sold in St. Petersburg at 11 65; the exchange being $151\frac{1}{4}$, and the charges $1\frac{3}{8}$ per Cent?

What net compound Pars of Exchange are produced from Bar Gold bought in London at 77 s 9 d per Oz. St. and sent to Utrecht to be coined into Ducats, which have afterwards been transmitted to the following places, and sold at the following prices; the charges for purchase and transport to Rotterdam being computed at $\frac{5}{16}$ per Cent, and for Coinage and Commission, &c. $\frac{1}{2}$ per Cent; the charges for transport thence and sale being as follows;

Ex. 5. Paris selling Price 11 87 $\frac{1}{2}$ Charges $\frac{3}{8}$ per Cent ?

6. Hamburg	—	105 $\frac{3}{4}$	—	$\frac{3}{8}$	—
7. Frankfort	—	5 42 $\frac{1}{2}$	—	$\frac{1}{2}$	—
8. St. Petersb.	—	11 55	—	$\frac{7}{8}$	—

PRODUCTS.

Ex. 1.	Flor.	12 04 C	Flor.	11 92 C
2.	Mks	14 2.5 Sc	Mks	14 0.5 Sc
3.	Pence	10.64	Pence	10.77
4.	—	9.54	—	9.67
5.	Fr.	25 12 C	Fr	24 87
6.	Mks	13 15.7	Mks	13 13.4
7.	Batz.	151.52	Batz.	149.79
8.	Pence	9.82	Pence	9.97

ARBITRATED PRICES

OF

BULLION.

An arbitrated price of Bullion is the rate or price of Gold or Silver in one country, as deduced from the price in another country.

The requisite data for calculations of arbitrated prices, are the same as for arbitrated Pairs of Exchange, with the exception of substituting the Rate of Exchange instead of that price which is in the money of the country making the operation for arbitrated prices; there are therefore required, the price abroad, the Rate of Exchange at which either the cost is drawn for, or the proceeds of the sales are remitted for, with the relations between the weights and the degrees of fineness at which the prices are reckoned.

For these latter particulars, reference may be made to the explanations given, as introductions, to the places which have been selected as being the chief of those concerned in Bullion operations; and for estimating the per Centages of the differences in the prices, we may either take 1-100 th part of the given price for 1 per Cent; or taking Bar Gold at 80 s and Bar Silver at 60 d per Oz. Standard, it may be reckoned that the variation of 6 d per Oz. in Gold makes a difference of 5-8 ths per Cent; and 3 d per Oz. in Silver, a difference of 5 per Cent.

Taking also the same estimated values as being sufficiently accurate for the purpose of allowing for the charges, we may call for,

Bar Gold.				Bar Silver.			
		Shill.	Pence.		Pence.	Eighths.	
$\frac{1}{8}$	per Cent.	0.1	or 1.2		0.075	or 0.6	
$\frac{1}{4}$	—	0.2	- 2.4		0.150	- 1.2	
$\frac{3}{8}$	—	0.3	- 3.6		0.225	- 1.8	
$\frac{1}{2}$	—	0.4	- 4.8		0.300	- 2.4	
$\frac{5}{8}$	—	0.5	- 6.0		0.375	- 3.0	
$\frac{3}{4}$	—	0.6	- 7.2		0.450	- 3.6	
$\frac{7}{8}$	—	0.7	- 8.4		0.525	- 4.2	
1	—	0.8	- 9.6		0.600	- 4.8	

ARBITRATED PRICES.

PARIS AND LONDON.

BAR GOLD.

Premium per Mille $4\frac{1}{2}$
Rate of Exchange 25.20

	1	Oz. St. ?
1	— 31.1002	Gram.
1000	— 3148.24	Francs.
1000	— * 1004 $\frac{1}{2}$	Pr. incl.
25.20*	— 20	Shillings.
25.20	) 195822	Fixed No.
	<u>77707</u>	
	310	4 per Mille
	<u>39</u>	$\frac{1}{2}$ -
	s 78.056	
	<u>d 0.672</u>	= $\frac{8}{8}$

Result, s 78 0 $\frac{8}{8}$ d per Oz.

BAR SILVER.

Premium per Mille 4
Rate of Exchange 25.20

	1	Oz. St. ?
1	— 31.1002	Gram.
1000	— 202.47	Francs.
1000	— * 1004	Pr. incl.
25.20*	— 240	Pence.
25.20	) 151124	Fixed N.
	<u>5997</u>	
	24	4 per M.
	<u>d 60.21</u>	

Result, 60 $\frac{1}{2}$ Pence per Oz.

Fixed Numbers for Rates of Exchange.

Rates.	Bar Gold.	Bar Silver.
Fr. 25 00 Cents .	78329 . .	60450
05 . .	- 172 . .	- 329
10 . .	- 017 . .	- 209
15 . .	77862 . .	- 089
20 . .	- 707 . .	59970
25 . .	- 553 . .	- 851
30 . .	- 400 . .	- 733
35 . .	- 247 . .	- 616
40 . .	- 095 . .	- 498
45 . .	76944 . .	- 381
50 . .	- 793 . .	- 265
55 . .	- 643 . .	- 149
60 . .	- 493 . .	- 033

ARBITRATED PRICES.

AMSTERDAM AND LONDON.

BAR GOLD.				BAR SILVER.			
Premium per Ct.	14			Price per Pond.	103½		
Rate of Exchange	12.10			Rate of Exchange	12.10		
	1	Oz. St. ?			1	Oz. St. ?	
12 —	11	Fine.		40 —	37	Fine.	
1 —	31.1002	Wigties.		1 —	31.1002	Wigties.	
1000 —	1442.60	Florins.		1000 —	* 103½	Florins.	
100 —	* 114	Pr. incl.		12.10* —	240	Pence.	
12.10* —	20	Shillings.					
12.10)	832527	Fixed No.		12.10)	690424	Fixed No.	
	67977				5706		
	6797	10 per Ct.			171	for 3 Flor.	
	2719	4 —			43	- ¾ -	
	<u>77.493</u>				<u>d 59.20</u>		
	d 5.916						
Result, s 77 5 ⁹ / ₁₀	d per Oz.			Result, 59½	Pence per Oz.		

Fixed Numbers for Rates of Exchange.

Rates.	Bar Gold.	Bar Silver.
Flor. 11 80 Cents . .	69706 . .	58511
85 . .	- 412 . .	- 264
90 . .	- 120 . .	- 019
95 . .	68831 . .	57776
12 00 . .	- 544 . .	- 535
05 . .	- 260 . .	- 297
10 . .	67978 . .	- 060
15 . .	- 698 . .	56825
20 . .	- 420 . .	- 592
25 . .	- 145 . .	- 361

ARBITRATED PRICES.

LONDON AND HAMBURG.

BAR GOLD.				BAR SILVER.			
Schill. per Ducat a.M. $103\frac{1}{2}$				Price per Mark 27 11			
Rate of Exchange 13 $10\frac{1}{2}$				Rate of Exchange 13 $10\frac{1}{2}$			
		1 Oz. St. ?				1 Oz. St.	
451	—	60 Marks		65 $\frac{1}{11}$	—	8 Marks F.	
12	—	11 Fine		1	—	* 27 11 M. & Sc.	
23 $\frac{1}{2}$	—	24 Ducat St.		13 $10\frac{1}{2}$ *	—	240 Pence.	
1	—	67 Ducats					
1	—	* $103\frac{1}{2}$ Sch. B.		13 $\frac{1}{2}$	)	295343 Fixed No.	
16	—	1 Mark		$\frac{1}{2}$	-	21627	
13 $10\frac{1}{2}$ *	—	20 Shillings.				27	
13 $\frac{1}{2}$	)	1043072 Fixed No.				583929 for 27 Mks	
		76381 for 100 Sc.		$\frac{1}{2}$	-	10813 - 8 Sc.	
		2291 - 3 -		$\frac{1}{2}$	-	2703 - 2 -	
		191 - $\frac{1}{2}$ -				1351 - 1 -	
		s 78.863				d 59.8796	
		d 10.356					
Result, 78 s $10\frac{7}{10}$ d per Oz.				Result, 59 $\frac{7}{10}$ Pence per Oz.			

Fixed Numbers for Rates of Exchange.

Rates.	Bar Gold.	Bar Silver.
Mks 13 6 Sc . . .	77987 . . .	22082
- 7 . . .	624 . . .	21979
- 8 . . .	265 . . .	877
- 9 . . .	76909 . . .	776
- 10 . . .	556 . . .	676
- 11 . . .	206 . . .	578
- 12 . . .	75860 . . .	480

ARBITRATED PRICES.

FRANKFORT AND LONDON.

BAR GOLD.

Price per Mark	320
Rate of Exchange	150
1 Oz. St. ?	
12 — 11 Fine.	
1200 — 159½ Marks.	
1 — * 320 Florins.	
1 — 15 Batzen.	
150 * — 20 Shillings.	
150) 365520 Fixed No.	
24368	
320	
s 77.978	
d 11.738	

BAR SILVER.

Price per Mark	20 25
Rate of Exchange	150
1 Oz. St. ?	
40 — 37 Fine.	
1200 — 159½ Marks.	
1 — * 20 25 Flo. & Kr.	
1 — 15 Batzen.	
150 * — 240 Pence.	
150) 442613 Fixed No.	
½ - 29508	
59016 for 20 Fl.	
¼ - 984 - 20 Kr.	
246 - 5 —	
d 60.246	

Result, s 77 11½ d per Oz.

Result, 60½ Pence per Oz.

Fixed Numbers for Rates of Exchange.

	Rates.	Bar Gold.	Bar Silver.
Batzen	148 . .	24697 . .	29906
	8½ . .	614 . .	806
	9 . .	532 . .	706
	9½ . .	450 . .	607
	150 . .	368 . .	508
	0½ . .	287 . .	410
	1 . .	207 . .	312
	1½ . .	127 . .	215
	2 . .	047 . .	119
	2½ . .	23969 . .	024

ARBITRATED PRICES.

BAR GOLD.

BERLIN.

Per Mark P. D. 218 $\frac{1}{2}$
Exchange 6 27

1 Oz. St ?
12 — 11 Fine.
1 — 480 Grains.
3608 $\frac{1}{2}$ — 1 Pr. Mk.
1 — * 218 $\frac{1}{2}$ Doll.
6.27 * — 20 Shill.

Fixed No. 243851

Result, s 77 3.69 d per Oz.

NAPLES.

Per Denaro Gr 91
Exchange 5.95

1 Oz. St ?
937 $\frac{1}{2}$ — 1000 Oz. N. St.
1 — 24 Denari.
1 — * 91 Grani.
100 — 1 Ducat.
5.95 * — 20 Shill.

Fixed No. 512.

Result, s 78 3.66 d per Oz.

PETERSBURG.

Per Silver Ruble 372 $\frac{1}{2}$
Exchange 10 $\frac{3}{4}$

1 Oz. St ?
12 — 11 Fine.
1 — 480 Grains.
6318 $\frac{1}{2}$ — 96 Solotn.
100 — 355 S. Ruble.
100 — * 372 $\frac{1}{2}$ P. Ruble.
1 — * 10 $\frac{3}{4}$ Pence.
12 — 1 Shill.

Fixed No. 197768

Result, s 79 2.32 d per Oz.

LISBON.

Premium 24 per Cent.
Agio 22 per Cent.
Exchange 50

1 Oz. St ?
1 — 480 Grains.
3541 $\frac{1}{2}$ — 1 Mark.
1 — 96.000 Reis.
100 — * 124 Pr. incl.
89 * — 100 Legal.
1000 — * 50 Pence.
12 — 1 Shill.

Fixed No. 108428

Result, s 75 6.41 d per Oz.

ARBITRATED PRICES.

BAR SILVER.

BERLIN.

Per Mark P. D.	14 $\frac{3}{10}$
Exchange	6 27
	1 Oz. St. ?
40 —	37 Fine.
1 —	480 Grains.
3608 $\frac{3}{4}$ —	1 P. Mk.
1 —	*14.3 Dollars.
6 27* —	240 Pence.

Fixed No. 295282

Result, 61.19 d per Oz.

NAPLES.

Per Pound Duc.	13.87
Exchange	5.95
	1 Oz. St. ?
40 —	37 Fine.
10 —	12 N. Stand.
1 —	480 Grains.
4950 —	1 N. Pound.
1 —	*13.87 Ducats.
5.95* —	240 Pence.

Fixed No. 258327

Result, 60.218 d per Oz.

PETERSBURG.

Per Silver Ruble	372 $\frac{1}{2}$
Exchange	10 $\frac{3}{4}$
	1 Oz. St. ?
40 —	37 Fine.
1 —	480 Grains.
6318 $\frac{1}{2}$ —	1 Pound.
1 —	22 $\frac{3}{4}$ S. R.
100 —	*372 $\frac{1}{2}$ P. R.
1 —	*10 $\frac{3}{4}$ Pence.

Fixed No. 159864

Result, 64.01 d per Oz.

LISBON.

Premium	20 per Cent.
Agio	22 per Cent.
Exchange	50
	1 Oz. St. ?
40 —	37 Fine.
11 —	12 Port. St.
1 —	480 Grains.
3541 $\frac{1}{2}$ —	1 Mark.
1 —	6000 Reis.
100 —	*120 Pr. incl.
89* —	100 Legal.
1000 —	*50 Pence.

Fixed No. 820607

Result, 55.32 d per Oz.

**THE APPLICATION OF THE FORMULÆ AND TABLES
FOR ARBITRATED PRICES PER OZ.**

EXAMPLE 1.

It is required to find the arbitrated Price per Oz. Standard of Bar Gold, when the Price in Amsterdam is $13\frac{3}{4}$ Premium, and the Rate of Exchange is 11 95; and also to find the net rate for export to Amsterdam, and the full rate for import to London, admitting the charges either way to be $\frac{5}{8}$ per Cent.

Fixed Number for 11.95	. . .	68.831
10 per Cent	. . .	6.883
3 —	. . .	2.065
$\frac{3}{4}$ —	. . .	.516
s 78 $3\frac{1}{2}$ d =	. . .	78.295
Charges $\frac{5}{8}$ per Cent	. . .	.489
s 77 $9\frac{5}{8}$ d =	. . .	s 77.806
s 78 $9\frac{3}{8}$ d =	. . .	s 78.784

To the fixed number taken from page 211 for the Rate of Exchange, are added the proportional parts for the Premium, and the amount forms the arbitrated price in Shillings, without regarding the charges, which are subtracted for export and added for import.

After reducing the decimals .295 .806 and .784 into pence, we find that, with the given rates in Amsterdam, the arbitrated rate without charges is 78 s $3\frac{1}{2}$ d, and that Gold must not cost more in London than 77 s $9\frac{5}{8}$ d per Oz. Standard, to admit of its export without loss, or it must sell in London for not less than 78 s $9\frac{3}{8}$ d per Oz. Standard, to admit of its being imported so as to defray the expenses.

EXAMPLE 2.

When the price of Bar Silver in Hamburg is 27 11½, and the Exchange on London is 13 8½, it is required to find the arbitrated price per Oz. Standard ; and the charges being estimated at ¾ per Cent, and the price of Bar Silver in London being 59½ d, it is required to find the Profit or Loss per Cent for exportations from London to Hamburg ?

The fixed Number for 13 Mks 8½ Sc. is 21801

	27	
	<hr/>	
	58863	
for 8 Sch. . . .	1090	
2	272	
1	136	
½	68	
	<hr/>	
Full Rate . . .	60.429	Pence.
¾ per Cent . .	.453	
	<hr/>	
Net Rate . . .	59.976	
Given Price . .	59.5	
	<hr/>	
Profit = ¾ per Cent. .	0.476	
	<hr/>	

The fixed number for 13 8½, which is found from the two fixed numbers in page 212, for 13 8 and 13 9, is multiplied by the number of the Marks, and parts are taken for the 11½ Sch. out of the rate for 1 Mark.

The export charges ¾ per Cent are subtracted from the full rate, and upon comparing the remainder, or net rate, with the given price, there appears to be a profit of ¾ per Cent upon this price.

EXERCISES.

Ex. 1. When Bar Gold in Paris is $9\frac{1}{2}$ Premium, and Bar Silver $5\frac{1}{2}$ Premium, and the Rate of Exchange is 25.20, what are the net arbitrated prices per Oz. Standard, allowing for export Charges, Interest, &c. on Gold $\frac{1}{2}$ per Cent, and on Silver $\frac{5}{8}$ per Cent.; and what is the Profit or Loss per Cent. on each, when the prices in London are 77 9 and $59\frac{3}{4}$?

2. When Bar Gold in Amsterdam is $14\frac{3}{4}$ Premium, and Bar Silver $105\frac{1}{4}$, and the Rate of Exchange is 11.95, what are the arbitrated prices per Oz. Standard, allowing for export Charges, &c. on Gold $\frac{1}{2}$ per Cent., and on Silver $\frac{5}{8}$ per Cent.; and what is the Profit or Loss per Cent. on each, when the prices in London are 77 9 and $59\frac{7}{8}$?

3. When Bar Gold in Hamburg is $102\frac{3}{4}$, and Bar Silver is 27 $10\frac{3}{4}$, and the Rate of Exchange is 13 $10\frac{3}{4}$, what are the arbitrated prices per Oz. Standard, allowing for export Charges, &c. on Gold $\frac{1}{2}$ per Cent, and on Silver $\frac{5}{8}$ per Cent.; and what is the Profit or Loss per Cent on each, when the prices in London are 77 6 and $59\frac{1}{2}$?

4. When Bar Silver in Frankfort is 20 30, and the Rate of Exchange on London is $149\frac{1}{2}$, what is the arbitrated price per Oz. Standard, for both exports and imports, allowing for Charges, &c. $\frac{7}{8}$ per Cent ?

5. When Bar Gold in Berlin is $219\frac{9}{10}$, and the Rate of Exchange on London is 6 26, what is the arbitrated price per Oz. Standard, allowing for export Charges, &c. 1 per Cent.; and what is the Profit or Loss per Cent., when the price in London is 77 9 ?

6. When the Silver Ruble in Petersburg is $371\frac{1}{2}$, and the Rate of Exchange on London is $10\frac{3}{4}$, what is the arbitrated price of Gold per Oz. Standard, allowing for export Charges, &c. $1\frac{1}{2}$ per Cent.; and what is the Profit or Loss per Cent., when the price in London is 77 9 ?

PRODUCTS.

Ex. 1.

Gold	Full Price	78 s 5.32 d	Net Price	78 s 0.62 d
	Difference	0 . 302 s	Profit	$\frac{3}{8}$ per Ct.
Silver	Full Price	60 . 283 d	Net Price	59 . 907 d
	Difference	0 . 157 d	Profit	$\frac{1}{4}$ per Ct.

Ex. 2.

Gold	Full Price	78 s 11.78 d	Net Price	78 s 7.06 d
	Difference	0 . 839 s	Profit	$1\frac{1}{12}$ per Ct.
Silver	Full Price	60 . 809 d	Net Price	60 . 429 d
	Difference	0 . 554 d	Profit	$1\frac{1}{8}$ per Ct.

Ex. 3.

Gold	Full Price	78 s 4.66 d	Net Price	77 s 11.96 d
	Difference	0 . 497 s	Profit	$\frac{5}{8}$ per Ct.
Silver	Full Price	59 . 777 d	Net Price	59 . 404 d
	Difference	0 . 096 d	Loss	$\frac{1}{16}$ per Ct.

Ex. 4.

Silver	Full Price	60 . 795 d	Export Price	60 . 263 d
		Import Price	61 . 327 d	

Ex. 5.

Gold	Full Price	78 s 1.09 d	Net Price	77 s 3.72 d
	Difference	0 . 440 s	Loss	$1\frac{1}{2}$ per Ct.

Ex. 6.

Gold	Full Price	78 s 11.77 d	Net Price	77 s 11.94 d
	Difference	0 . 243 s	Profit	$\frac{5}{16}$ per Ct.

APPENDIX.

ARBITRATIONS OF MERCHANDISE.

The calculations of the Arbitrations of Merchandise are most usually made for the purpose of finding the arbitrated Price, but sometimes also for finding the arbitrated Rate of Exchange, produced from goods bought in one country and sold in another.—Similar data are required for these calculations as for those of the Arbitrations of Bullion; but as the charges are of much greater amount, and frequently depend more upon the quantity than upon the value of the Goods, they often require different adjustments, which can only be conveniently done in *pro forma* Statements of the Purchases and Sales.

EXAMPLE 1.

ARBITRATED PRICE.—IMPORTATION.

To find the arbitrated price per Imperial Gallon, of Cognac Brandy, bought in Bourdeaux at 165 Francs per 27 Veltes; the whole charges being estimated at $22\frac{1}{2}$ per Cent, the course of exchange being 25.20 Francs, and 10 Veltes being reckoned equal to $16\frac{1}{2}$ Imperial Gallons.

			1 Imperial Gallon ?
$16\frac{1}{2}$	—	10	Veltes.
27	—	* 165	Francs.
25 20 *	—	20	Shillings.

	s	d	
Product	2	$11\frac{1}{2}$	Price without Charges.
	-	7	20 per Ct.
	-	$\frac{3}{4}$	$2\frac{1}{2}$ per Ct.
Arbitrated Price	s 3	7	with Charges.

EXAMPLE 2.

ARBITRATED PRICE.—IMPORTATION.

To find the arbitrated price per Cwt of Argol, bought at Leghorn at 50 Lire effettive per 100 lb., Exchange at 49 Pence, with the following estimations; Charges at Leghorn $4\frac{1}{2}$ per Cent; Charges in London 15 per Cent; Discount on the Selling Price $2\frac{1}{2}$ per Cent; and allowances on the weights, 2 per Cent more at Leghorn than in London.

					112 lb. Avoirdupois ?
112	—			149.6	lb. of Leghorn.
100	—			50	Lire in Silver.
$5\frac{1}{2}$	—			1	Pezza.
107	—			100	in Gold.
1	—			49	Pence Sterling.
12	—			1	Shilling.
1496	×	50	×	49	= 366520
$5\frac{1}{2}$	×	107	×	12	= 7383
s 366520	÷			7383	= 49.64 s
				49.64	
Leghorn Charges				2.23	$4\frac{1}{2}$ per Cent.
				51.87	
London Charges				7.78	15 per Cent.
				59.65	
Discount				1.49	$2\frac{1}{2}$ per Cent.
				61.14	
Difference in Weights				1.22	2 per Cent.
Arbitrated Price				s 59.92	= 59 s 11 d

The pro-forma statement of the purchase and sales for the above, may be made out in the following manner.

PRO-FORMA ACCOUNT (Conto finto).

12 Casks, Argol, from Leghorn to London.

Gross 11118 lb. 222 at 2 per Cent, Peso.

24 Corde.

1254 Casks (real Tare)

Tare 1548 48 Cortesia.

Net 9570 at 50 Lire eff: per 100 lb. Pezze 832 3 5

Charges 19 9 7

851 13 0Commission 2 per Cent 17 1 0Silver 868 14 0Gold 811 17 4

CHARGES at 49 d £ 165 15 1

Insurance on £ 200 at 30 s . . . £ s d
3 0 0

Policy 10 0

Freight on 4 Tons at 40 s . . . 8 0 0

Primage 16 0

Wharfage, Landing, Entries, &c. 2 10 6

Rent 6 Weeks at 4 d per Ton . . . 8 0

Brokerage, Advertisements, &c. . 3 10 0

Duty on 66 Cwt. at 2 s . . . 6 12 0 25 6 6191 1 7Discount $2\frac{1}{2}$ per Cent on £ 196 . . . 4 18 0

Arbitrated value, nearly 60 s per Cwt. £ 195 19 7

Viz. 11118 lb. of Leghorn at 149.6

= Cwt. 74 1 7 Gross—Tare 8 1 14

8 3 18 Draft 2 4

Cwt. 65 1 17 at 60 s = £ 196 4 0

N. B. For the relations of Lire to Pezze, and of Silver to Gold money, see page 37.—And it may here, in addition, be remarked, that although the general money of account of Leghorn is, as there stated, in Silver, yet the accounts current, &c. of foreign correspondents are usually made up in Gold money.

EXAMPLE 3.

EXPORTATION.—ARBITRATED PROFIT OR LOSS
PER CENT.

To find the arbitrated Profit or Loss per Cent, produced by
Cochineal bought in London and sold in Hamburg—Cost Price
10 s 6 d per lb with $2\frac{1}{2}$ per Cent Discount ; Charges of Export
&c. $2\frac{1}{2}$ per Cent ; Selling price $9\frac{1}{2}$ Marks Bco per lb, with the
rabat of $8\frac{3}{8}$ per Cent ; Charges at Hamburg 6 per Cent ; Rate
of Exchange 13 Mks 10 Sc. ; and allowance for loss of Interest
&c. 2 per Cent.

		100	£ ?	
1	—	20	Shillings	
$10\frac{1}{2}$	—	1	lb Avoirdupois	
100	—	93.6	lb Hamburg	
1	—	$9\frac{1}{2}$	Marks Bco	
$108\frac{3}{8}$	—	100	Net selling Price	
100	—	94	with Charges	
$13\frac{5}{8}$	—	1	£ Sterling	
<hr/>				
20	×	93.6	×	$9\frac{1}{2}$ = 17784
$108\frac{3}{8}$	×	$13\frac{5}{8}$	×	$10\frac{1}{2}$ = 1554612
<hr/>				
17784	÷	1554612	=	114.395
6 per Cent	.	.	.	6.863
<hr/>				
				107.532
				102.000
				with Interest.
<hr/>				
Profit per Cent	£	5.532	=	£ 5 10 8

It is here to be observed, that the Discount being the
same per Centage as that of the estimated shipping Charges,
the one is set off against the other, making nearly the same
result as not allowing the Discount, and in the lieu thereof de-
livering the Goods free on board.

EXAMPLE 4—EXPORTATION.

ARBITRATED RATE OF EXCHANGE.

With the same data as to the preceding calculation, it is required to find the arbitrated rate of exchange, with the Per Centage of the Profit in comparison with the given rate of exchange.

		20	Shillings ?	
10½	—	1	lb Avoirdupois	
100	—	93.6	lb of Hamburg	
1	—	9½	Marks Bco.	
108½	—	100	with Rabat	
100	—	94	with Charges	
<hr/>				
20	×	93.6	×	9½ = 17784
108½	×	10½		= 1141
<hr/>				
1141	)	17784		
<hr/>				
		15.586	=	15 Mks 9,1 Sch.
6 per Cent		.935		
<hr/>				
		14.651	=	14 Mks 10,4 Sch.
<hr/>				
13 Mks 10 Sch.	=	13.625		
2 per Cent		.272		
<hr/>				
		13.897		
<hr/>				
Difference		.754	=	11.7 Sch.
<hr/>				
Mk 0.754 on Mks 13.625	=	£ 5 10 8	per Cent	

Mk 0.754 on Mks 13.625 = £ 5 10 8 per Cent.

This result is the same as that of the preceding calculation ;

FINIS.

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